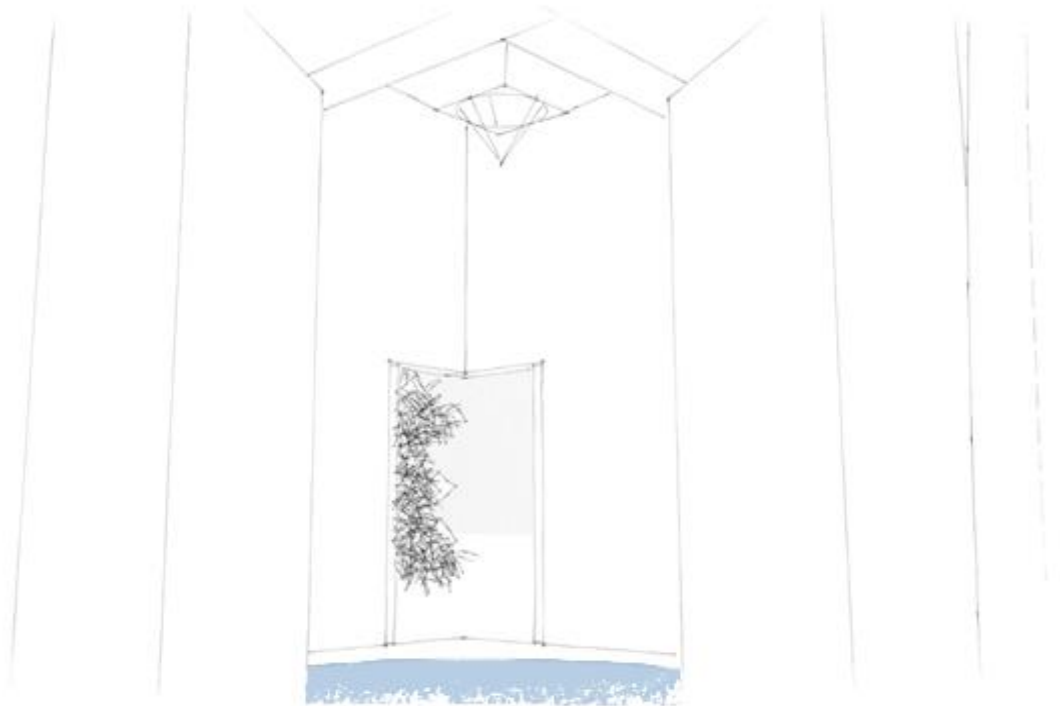


Tang Jie

COLORLESS

-An exploration toward architecture as a language



Msc Thesis in Architecture

School of Architecture

Examiner: Fernando Nieto Fernandez

Examiner and topic approved by the Faculty of
Business and Built Environment on November

ABSTRACT

Tang Jie: Colorless - An exploration toward architecture as a language
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Architecture is a long-standing discipline, since it appears when human has traceable history. And it is always considered as a subject mixing art and engineering together. Some architectural theorist has used the term "Genius loci" to stress that architecture is about both physical and spiritual being. Historically, architecture plays the role also as a cosmological symbol to show how human perceive the world they live in and an edification tool for the mass and a bridge between the divinity and the secularity. In contemporary, After the baptizing of modernism, people tend to see architecture as a more functional object. And this article endeavours to recollect the ancient traditions and explore the possibilities of utilizing architecture as a tale-bearing, to relive the metaphor in the ancient script and complicated holographic ancient world view and a healing tool to restore and find balance between spiritual and physical life, thus providing inspirations for modern world in dealing with the relationship between mankind, geographical environment and cosmos.

The thesis contains mainly four chapters: Architecture as language, Background analysis, Design methodology and Design as process. the first chapter reviews the history of metaphor and symbolism in architecture to show that in ancient buildings the ancestors always make architecture as a cosmological embodiment especially in ritual architecture. The second chapter gives several case studies in history to examine how architect utilize architecture as an expression tool to convey certain information or ideology and how they reconcile the relationship between heaven earth and man. The third chapter is about the methodology of the design which absorbs from the ancient resources and cases and explain the metaphor of the design outcome. The fourth chapter is the presentation of the design including the process and outcome.

PREFACE

I would like to thank professor Fernando Nieto Fernandez who is my supervisor for his patience and precious time. I really appreciate his practical instructions and insightful guidance through the whole process. And I also want to show appreciation to Professor Jaume Mayol Amengual, teaching assistant Alba Balmaseda Dominguez, the classmates of Haecceitistic types and teachers and staff in Tampere universities. And they made it possible for me to exchange in University of Stuttgart to experience a different culture and give me this design opportunity and inspiration in Mallorca and provide their insight for me to further my design.

My gratitude is also to my God the best architect and healer of the universe and his unconditional love who help me overcomes many difficulties during my thesis as well as my life and give me inspirations and understanding of the ancient script and his design concept behind the physical world to put these thoughts into my design. He delivered me out of depression and restored my spirit and that is why I want to put all this spiritual and healing part in this design too. Though the outcome is still not perfect but through the process I could learn to become an architect I want to be.

I also want to thank my parents, especially my father helps me a lot to achieve the element design part. I am also thankful to my grandparents and friends who always support me along the journey and give me necessary help when I got stuck in the process and they also provide their valuable support for my thesis. They made it possible so I can study in Finland.

Tampere, 27 October 2019

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INTRODUCTION

Everything has carried a meaning. Because this world has been built by word or information. Life itself is a highly dense information package expressed by DNA. And every kind of media human has adopted is, in a sense, a language to communicate. The musicians use structures of notes to express invisible emotions and painters use composition of color and line to share sympathy of life experiences. When reviving the history of mankind, it is full of symbols which behind it supported by the ancient holographical cosmology and ideology. Nothing under the heaven is genuine new, just like Renaissance is just a retracement of the lost memory in ancient Greek. The law of entropy is universal both physical and spiritual. Therefore the information will always got diminished through the media. "All history is contemporary history"¹. So I want to trace back to the ancient script *Tanach*, which records the beginning of time, space and matter, and find the primeval sources of symbols and metaphors. This article just tries to get inspirations from the tradition of symbolism and numerology etc. Hopefully, it probes a way to see architecture in a different perspective which is more than merely a functional physical being.

In ancient cosmology, heaven earth and human are interacted and weaved with each other. everything is connected by the same designer same "DNA"- same law. In a sand you can perceive a universe and a cell carries all the DNA information of the body. Everything created has carried the designer 's willing, order comes not by accident. Basically, design is a subject about arrangement and establish order just like the Hebrew God in *Genesis* break darkness and chaos into light and order. It is very common in the ancient buildings, the architect tries to imitate astrological and aesthetic order to respond to heavenly orders making it the biggest physical symbol

¹ "All history is contemporary history," is said by the Italian philosopher Benedetto Croce

fabricated by mankind. In our daily life we can hardly become symbol- independent. Meantime, language itself is also a symbol system based on phonetics. We use many objects to carry meanings but the object itself is not the concept we refer to. Like in Chinese tradition bamboo is a symbol of noble character². But bamboo itself is not the virtue itself, just because the scholar wants to use it as a symbolic reminder.

Everything designed has a concept. The King Solomon has been regarded in the *Tanach* as a man of wisdom, because he can perceive the concept behind every creation¹ to teach his people³. The creator is good at using parables and symbols and mathematics and geometry both building the nature and his holy temple and this proportions have been inherited by the Christian architecture. Actually, religious building is always a complex symbol carrying huge information for the offspring to decode. It is interesting to observe history that ancestors have looked into the creation and nature and establish connotations, metaphors and establish a system of symbols which eventually becomes the inspiration for artists and architect. As a result, I just try to learn from history to form my vocabulary to use architecture as a vessel to speak about the same story which has talked by the ancients.

This outcome project is a summer house located in the central part of Mallorca. It is an exploration towards architecture as a language and healing tool to express and restore and find balance between spiritual and physical life. The concept-colorless originating from Yi-ology which endeavors to achieve the goal of simplicity and

² because it is hollow inside which is similar to the virtue of humbleness that means one person empty oneself from the inside out. So the scholars always tend to fill their private gardens with bamboo which can be seen in many ancient Chinese paintings and literature.

³And he spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall: he spake also of beasts, and of fowl, and of creeping things, and of fishes. And there came of all people to hear the wisdom of Solomon, from all kings of the earth, which had heard of his wisdom. (1 Kings 4:33-34 KJV)

nature-based as well as cosmological symbol to reconcile the relationship between heaven, earth and man.

This work is generally stand in the shoulders of the Giants as Newton says. when people have no resources, they will turn to creation for inspiration. The creation is the ultimate resources of both designer and scientist. It is why the bionics is always the flourishing topics in both fields. Consequently, the outcome of this thesis is just a naive or artificial imitation of the giants.

CHAPTER I ARCHITECTURE AS LANGUAGE

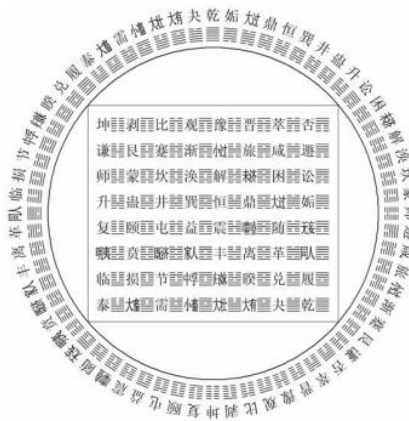
1.1 Architecture as a world view

W.R. Lethaby believed that the earliest palaces and temples were established as a representation of the "cosmic structure." [1]The house is the first model of the universe. In order to recognize something, people must simulate it themselves. Early house's shape is either square or circle. It is synonymous with people recognizing the universe in which they live. Le Corbusier is also in his *Toward a New Architecture* Claiming that "Architecture is the first manifestation of man creating his own universe, creating it in the image of nature, submitting to the laws of nature, the laws which govern our own nature, our universe." [2]Vitruvius' *Ten Books on Architecture* reflects Pythagoras's world view of the universe, that is, the universe is made up of numbers. [1]Universe is a closed system determined by the relationship of numbers which are universal therefore they are holy and genuine. This view of the universe dominated Greece and influenced greatly until the Renaissance.



In ancient times we can find many resources shows their geometrical world view. The ancient ancestor think the origin of the world is circle and square.

Figure 1.1.1 Fu Xi and Nu Wa holding a ruler and compass respectively. Both implements referred to a geometrical cosmology concept.(Source: Major, John S. Heaven and earth in early Han thought.)



I-Ching is the source of Chinese civilization all the ancient Chinese sciences and philosophies etc originated from it. And the hexagram is a typical symbol of the *I-Ching* thoughts.

Figure 1.1.2 Original hexagram shows the ancient Chinese's world view which the heaven is circle and the earth is square

(Resource: <http://angelx550.blog.163.com/blog/static/44763984201131293913191/>)

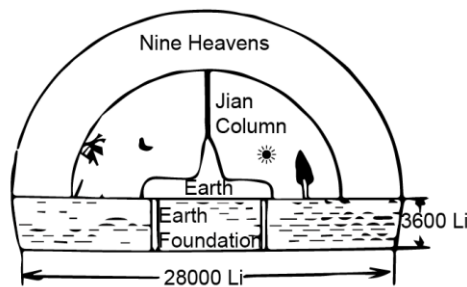


Figure 1.1.3 Jian column- kunlun cosmic model diagram

(Resource: Wang lumin. *The origin of Chinese classical architectural culture*)

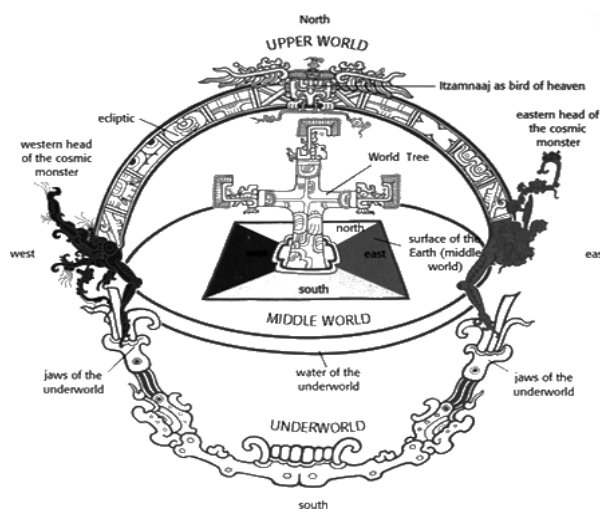


Figure 1.1.4 Maya world view is also geometrical and has a tree in the center to reach heaven.

(Resource: <https://ambergriscaye.com/forum/ubbthreads.php/posts/505832.htm>)

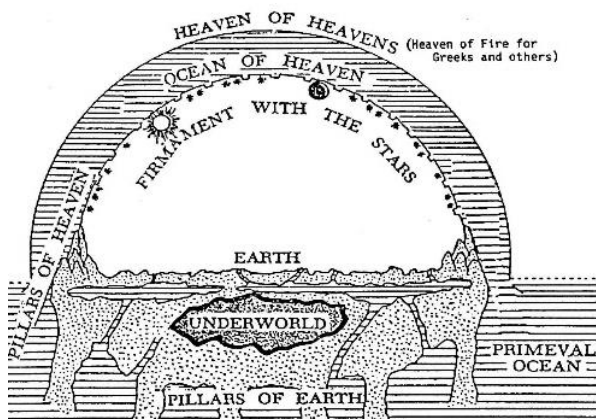


Figure 1.15 Cosmology of the ancient Hebrew

(Resource: <https://www.webpages.uidaho.edu/ngier/gre13.htm>)

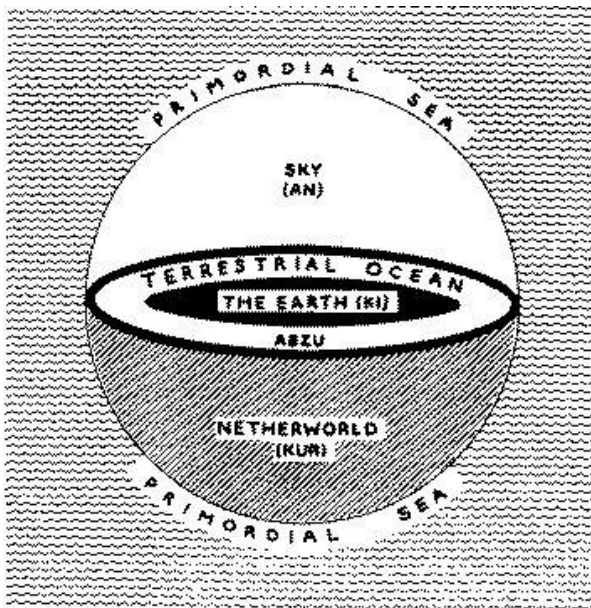


Figure 1.16 Mesopotamian concept of the world

(Resource: <https://wolfweb.unr.edu/homepage/dcronan/CH201/outlinesOne/sumerianWorld.html>)



Figure 1.17 God, the Divine Architect.

(Resource: *Illumination from Bible moralisée*, c.1250. Österreichische Nationalbibliothek, Codex Vindobonensis 2554.)

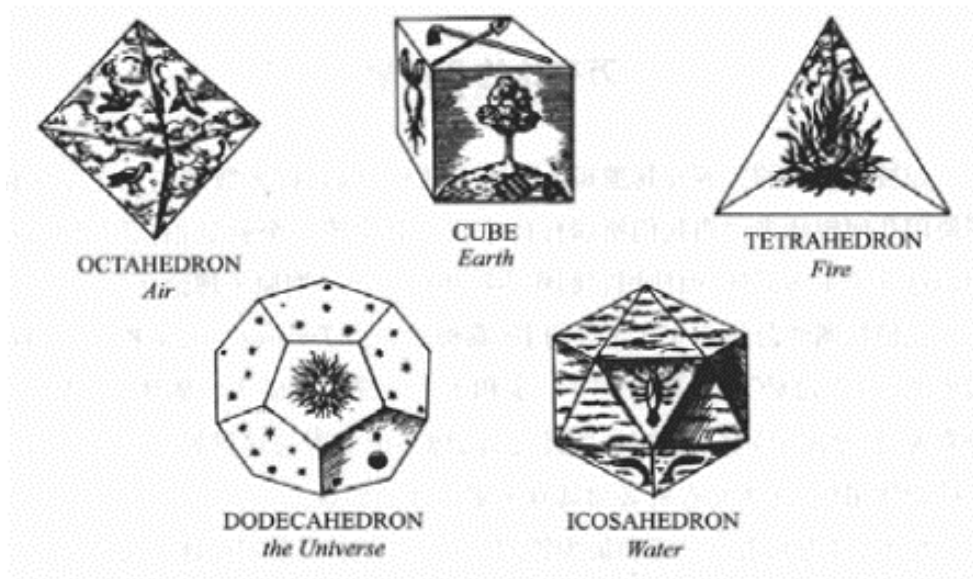


Figure 1.1.8 Johannes Kepler's drawing of the five Platonic solids

(Resource: Keith Devlin. *The Language of Mathematics: Making the Invisible Visible*)

1.1.1 Symbolism, Geometry, Proportion

Vitruvius argues that our ancestors' basic ideas about measurement came from the human body components and it is obvious that these scales are necessary in all kinds of work, such as fingers, palms, and feet Cubit (equals to 45.7cm) . The question of squaring a circle has always been discussed in ancient Greece and The question is also symbolizing the combination of heaven and earth, matter and spirit which involved the ratio $\sqrt{2}:1$. The elementary geometry of circle and square is discussed at the beginning of chapter 4 of the *Ten books of architecture* and then it reappears after Vitruvius's discussion on the balance of human body. In contrast to other paragraphs Vitruvius's comment on the relationship between human body and geometry has More influence on architecture. [3]They inspired Leonardo Da Vinci's famous Vitruvian man, and Francis Francesco di Giorgio, Fra Giocondo (1511) and A

less dramatic interpretation by Cesariano and others.

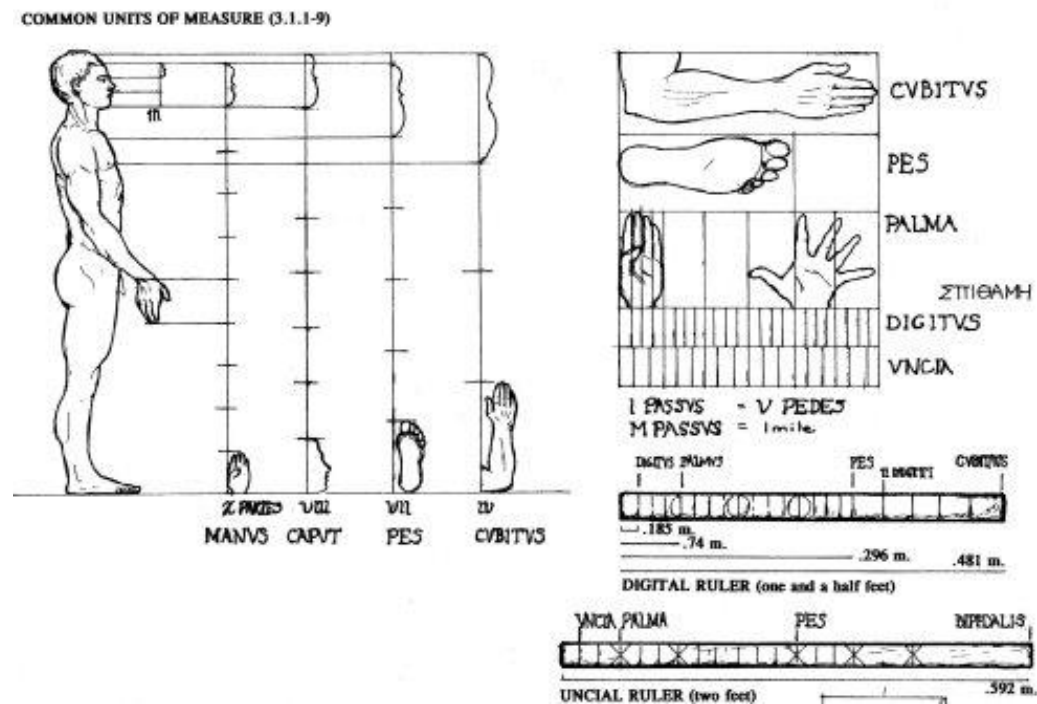


Figure 1.1.9 Vitruvius' anthropometry

(Resource: <https://thonyc.wordpress.com/2017/04/05/a-renaissance-artist-engineer-icon-vitruvian-man/>)

Leonardo's Vitruvian man achieved the perfect solution to the perfect harmony between man and geometry. The below analysis is based on the square method of an octagon, which the side of the square equals to the side of the octagon and the diameter of the circle is half length of the octagon string. The following figure shows Lawlor's analysis of the Vitruvian proportions in his book *Sacred Geometry*. One of the black dots which located in the golden mean of body is his navel, where he connects to his mother's belly and it is the metaphor for the beginning of life. The color dot is the location of the genital (half of the body), which is a metaphor for the continuation of life[4].

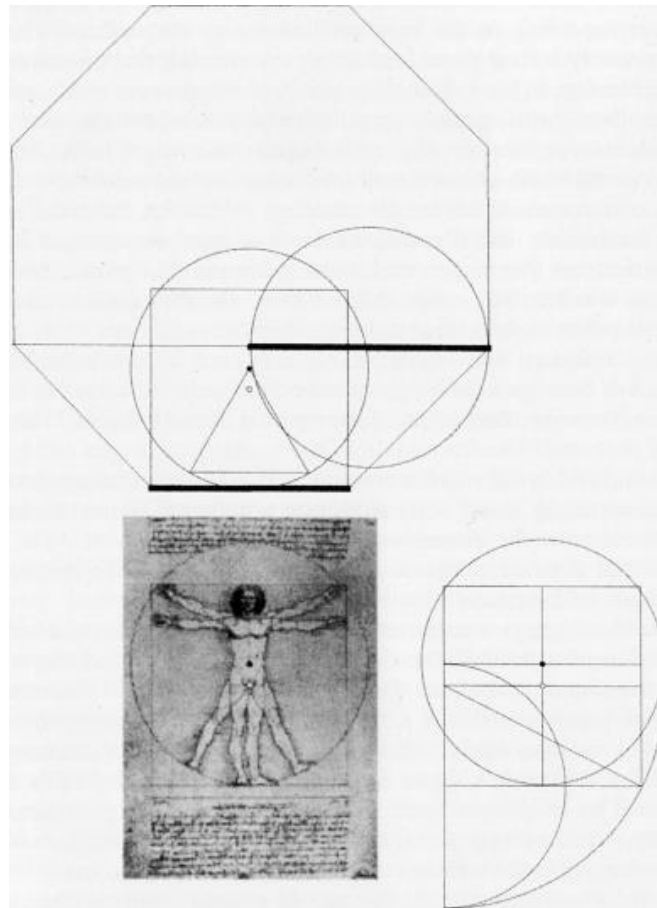


Figure 1.1.10 Analysis of Leonardo's Vitruvian man

(Resource: Lawlor R. *Sacred geometry: philosophy and practice*)

At the same time the circle is often used as a metaphor for God and the square as a metaphor for man. Henry Cornelius Agrippa in his book *De occulta philosophia* uses Ad quadratum and astrology and introduce the zodiac and the representation of planets. During Renaissance time, many Church plans are based on circle and square.

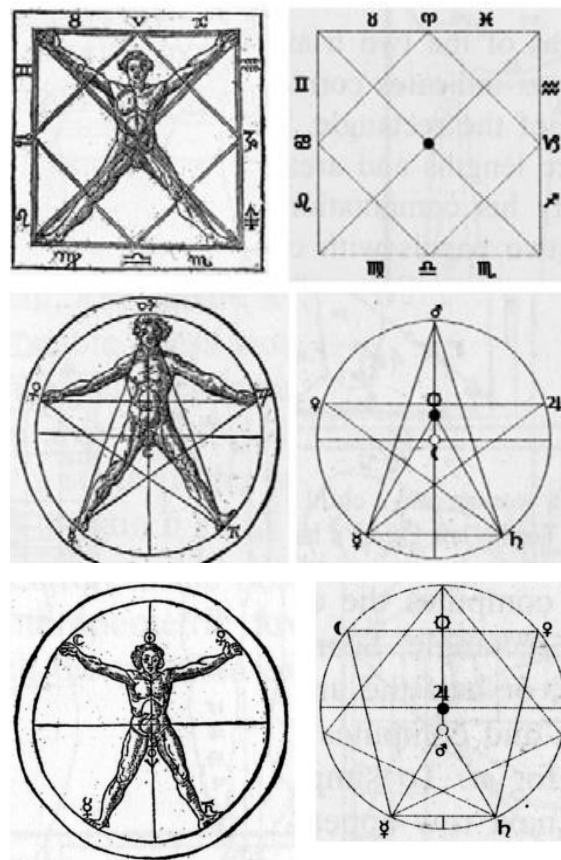


Figure 1.1.11 Agrippa's geometrical and astrological analysis

(Resource: Lionel M. *Architectonics of Humanism*)

The newest and most mathematically successful descendant Maintaining the Vitruvius form tradition is Le Corbusier's modular man. Corbusier once gave Einstein a copy of *Modular*, which Einstein commented, "It is a scale of proportions which makes the bad difficult and the good easy." [5] He didn't use "good design" but "good", he said What is in the mind goes beyond aesthetics in scope and content: a moral goodness, or a cosmological goodness, the visual appearance of a work of art

is nothing more than its external symbol. Like Einstein, Le Corbusier is well-informed,

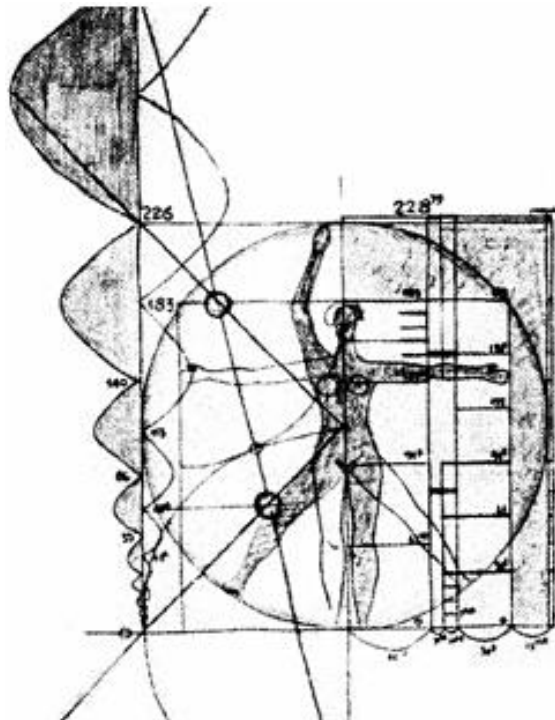


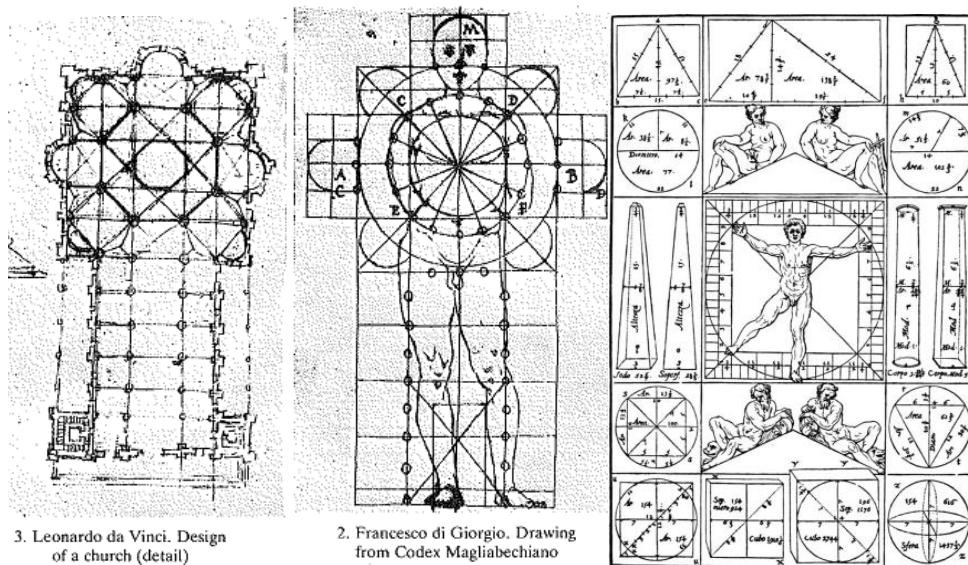
Figure 1.1.12 Le Corbusier's modular man

(Resource: F rings M. *The golden section in architectural theory*)

which made him an heir to the Renaissance spirit. There are no other Architects of Modernism give such an important role to mathematical proportions in architecture. For him, the mathematical rules were more than either aesthetic rule or even means for humans to comprehend the world, but the universal itself or the core or dominant principle, the source of the unity and harmony of nature and art

We can find that Renaissance architects were influenced by Vitruvius's interpretation of the relationship between geometry and man. A large number of related discussions on the comparison of people and buildings, as well as design, have been generated by the inspiration of it. Like the ideal church plan in Renaissance was based

on the geometric conception of circle and square[4].



3. Leonardo da Vinci. Design of a church (detail)

2. Francesco di Giorgio. Drawing from Codex Magliabechiano

Figure 1.1.14 Renaissance ideal church plan's relationship with circle and square
(Resource: Lionel M. Architectonics of Humanism)

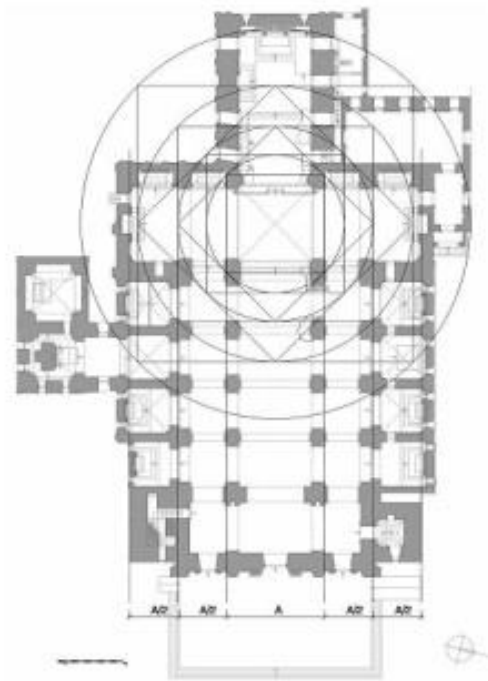


Figure 1.1.13 Goa cathedral Ad quadratum generation

(Resource: Pereira A N. Renaissance in Goa: Proportional Systems in Two Churches of the Sixteenth Century)

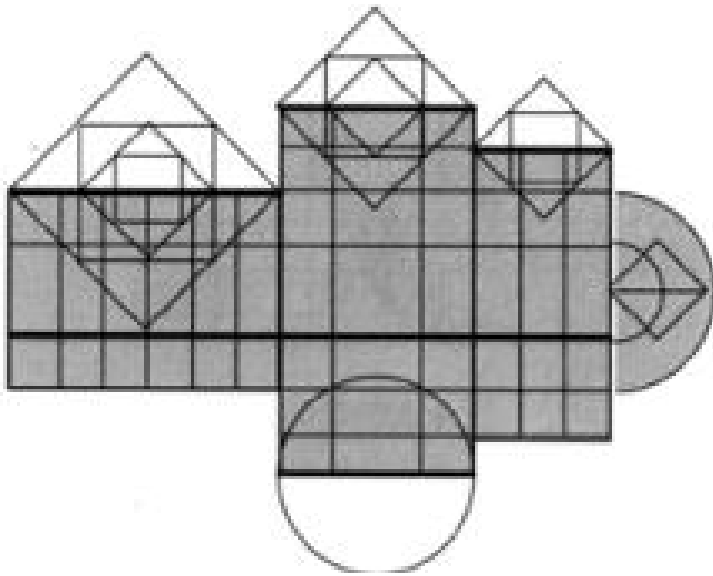


Figure 1.1.15 Amiens Cathedral using Ad quadratum in generating plan

(Resource: Lionel M. *Architectonics of Humanism*)

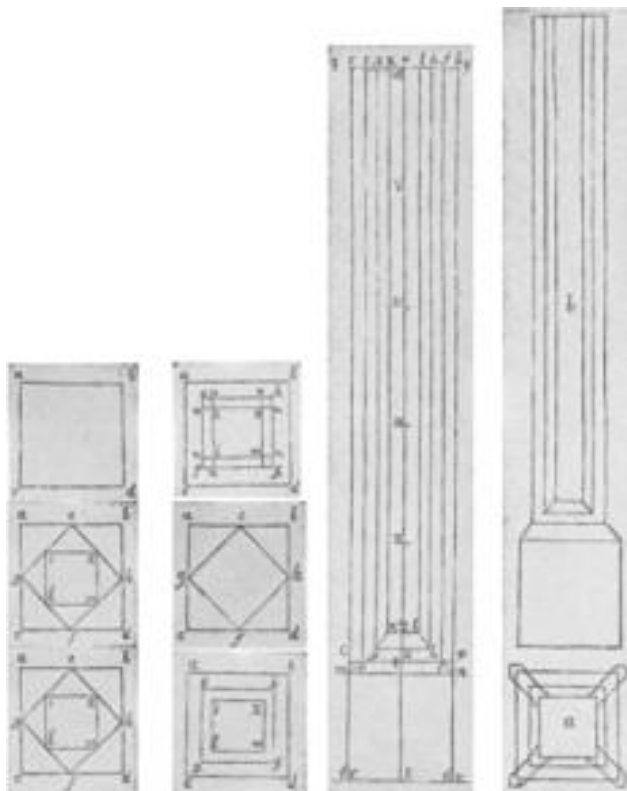


Figure 1.1.16 Roriczer using AD quadratum to generate mouldings

(Resource: Paul.F. *The Secret of the Mediaeval Masons*)

Sacred geometry practices in the ancient and medieval world were based mainly on

two systems: Ad Quadratum and Ad Triangulum. These methods allow architects and artisans to maintain the ratio characteristics of the structure through some simple calculations using ruler gauges. When a basic unit measure is to be determined, after a series of geometry and Numbers will have to determine the measurement method for the construction of each component, such as by a German architect Matthew Roriczer records On the *Booklet On Pinnacles* (1486) of the medieval minaret mouldings geometry generation process. The earliest account of Ad Quadratum and Ad Triangulum is in Plato's *Timaeus* of how the creator divided the universe into shapes. The creator created the universe according to the geometric series 1, 2, 4, 8 (Ad Quadratum) and 1, 3, 9, 27 (Ad Triangulum). Together, these sequences constitute the music theory of harmony of Pythagoras and are used as the basis for architectural examples by Alberti in his book *De Re Aedificatoria*. Onseca believes that these proportions were also used in the pyramid construction of the third dynasty in Egypt, Stonehenge, Stupa at Sanchi , Amien Cathedral and Goa Cathedral. Ad Quadratum contains the irrational number $\sqrt{2}$. And Pythagorean tradition doesn't like irrational Numbers because they can't be expressed as integers. But $\sqrt{2}$ can be thought of as the proportional geometry of the sides of the two squares in Ad Quadratum. This number was familiar to medieval craftsmen who used it to design Spaces and arches to evoke a sense of harmony. They put $\sqrt{2}$ as the geometric mean of between 1 and 2 (temperate scheme) 1, $\sqrt{2}$ and 2 form a geometric sequence as described by Boëthius. In cloister construction, two squares define the quadrilateral cloisters, which have the same area as the atrium. That is to say, the walk to the church in such a cloister can be seen as the way to heaven through the two extremes of virtue. The rate of decrease in width corresponds to the same symbolic order as the geometric mean pointing to heaven[6].

The first gothic building, St. Dennis church, was based on the metaphysical idea of "measurement, number and weight" (*Wisdom of Solomon*). It is a reflection of the shift of Christian thought from mysticism to rationalism. It is Christian metaphysics in the dawn. Like Suger, Peter who built the Cathedral the bishops of the Church is a Benedictine monk also has a great enthusiasm for architecture, like many contemporary thoughts the Church should be a prototype of the temple of the mysterious Christ, he also wrote a book called the *Manual on the Mysteries of Church* in the book, and in the first part, he illustrates the Christian symbol of Basilica and the metaphorical meaning. And the symbolic meaning of the square was repeatedly emphasized. The square should be used in the shape of the window and the cut stone, symbolizing the perfect morality of man and the unity of the church. These mysterious metaphors can be found in Noah's ark and Solomon temple. Even in the late middle ages, the architects of Milan Cathedral insisted that the four-corner tower at the crossroads be modeled after the biblical vision of revelation, "Christ surrounded by the authors of the four gospels." [7] St. Dennis's architect, bishop Suger, says in his own book that he was inspired by the Hagia Sophia in Constantinople and the temple of Solomon described in the Old Testament as a metaphysical system. He also deals with some Christian numerical symbolism. The intimate relationship between architecture and music was more evident to medieval people than it is to us today. Suger talked about the problem of scale in the first chapter of the *pamphlet about St. Dennis construction*. He said that the new part of the church could achieve the same aesthetic effect as the old part of the church "by means of geometry and algebra", [7] and he turned the theological translation of light and music into the form of gothic architecture. The medieval mind held the world view that merely ideas were real, that facts and things were real or not

depending on whether they participated in the truth of the idea.

Unlike Vitruvius only use the analogy between the proportion of human body and the proportion of building to explore the form beauty, Palladio in his *The four books on architecture* sought a way of reasonable function through the analogy of human body and architectural function. All these constitute the architectural theories and colorful scenes of the Italian Renaissance. Architectural theorist Rudolf Wittkower in his *Architectural Principles in the Age of Humanism* discussed Palladio's architectural principles in chapter 3. The geometry in Palladio's villa is discussed. Wittkower sums up the common feature in palladio's 11 villas. It comes from a formula called "Sudoku." [8] which takes the motif of square. This symbols of square and circle also can be seen in ancient Chinese religious architecture

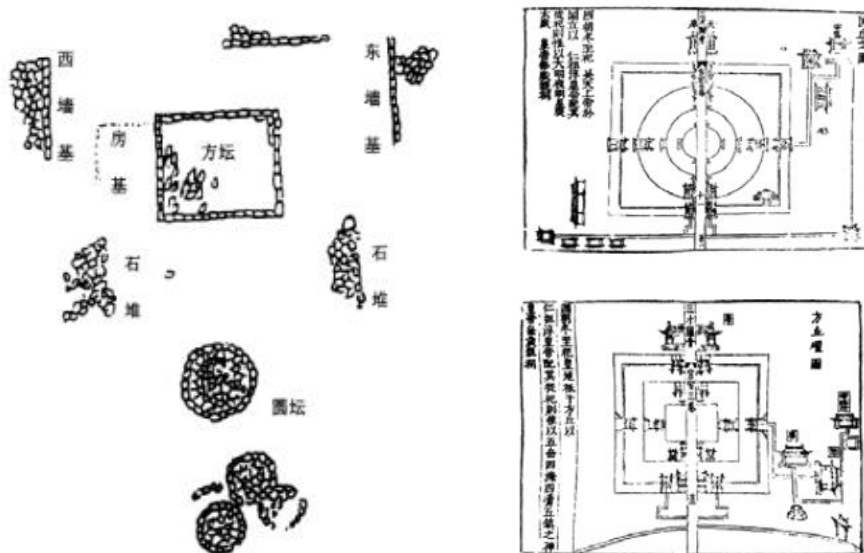


Figure 1.1.17 The picture of heaven altar and earth altar Prehistoric altar site in Liaoning province (Source: Meng Tong. *Chinese tradition Research on the concept of time in architecture*)

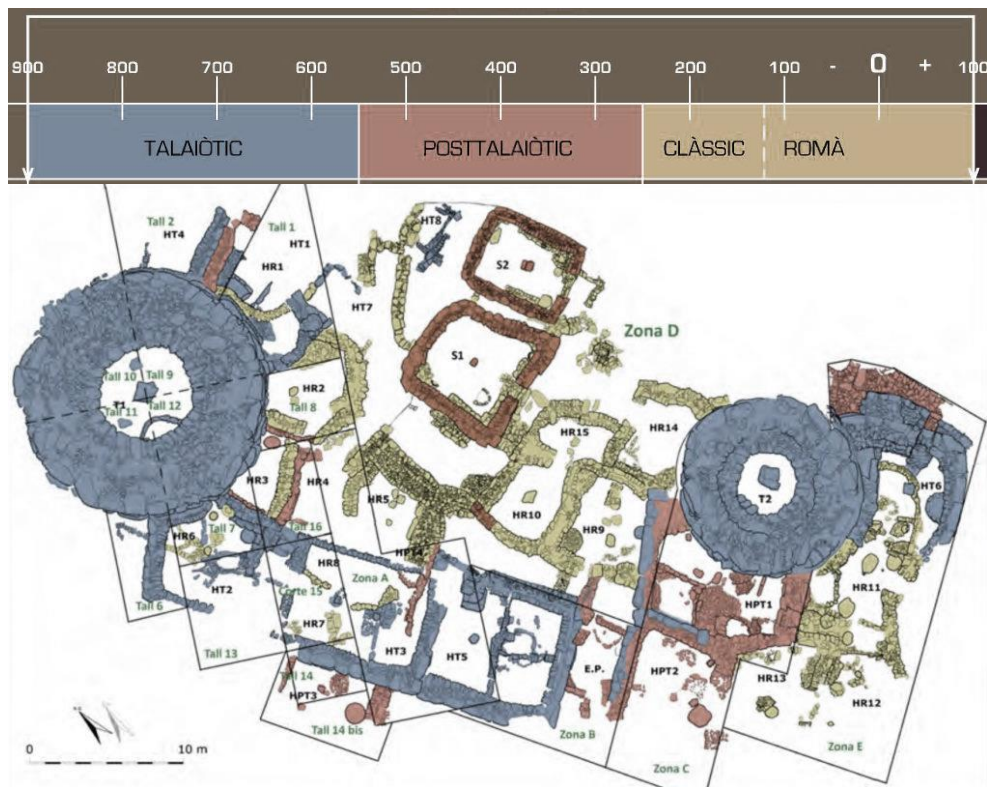


Figure 1.1.18 Son Fornés archeological site plan in Mallorca

(Resource: <https://sonfornes.mallorca.museum/el-jaciment/el-poblat/>)

Son Fornés is an archeological site located in Mallorca can be traced back to Talaiotic time (ca. 900-550 BC shown in blue color). And the construction in this period is by colossal stone. Talaiots is the name of this monumental structure which adopt the form of circle and square. And in the central of the circular structure there is a column which is similar of the Jian-column in Chinese cosmology and world tree in Maya cosmology.

1.1.2 Christian symbolism

The *Bible* is a great source of proportions in the Christian world. For example, when God instructs Jews to build buildings, he always tells them exactly what the scale is.

Medieval godfathers analyzed the ratios mentioned in the bible and these ratios were verified again by natural observation. In fact, the ancient Greeks also had some knowledge about ratios. At the height of the Renaissance, these scales were regarded by architects as an important source of scale. Many similar proportions can be found in Palladio's design. Von Simson mentions a document of the 16th century French architect Philipert Dolorme. Dolorme believes that architects should use god-revealed ratios by geometric and numerical methods[4]. And architects should study the scale of god's revelation in the heavenly temple in Noah's ark, the tabernacle of Moses, the temple of Solomon, and the heavenly temple seen in the vision of Ezekiel, as well as the heavenly temple seen in the revelation by John. For some non-biblical scholars, some biblical texts can be very difficult and confusing, such as Ezekiel. Here we can look at some simple applications of scale in architectural art. These biblical materials were mentioned by palladio and Dolorme, who designed the building's plan facade to enhance the application of these proportions, Cistercian would advocate simplicity and restraint, and oppose decoration, and the simplicity of Numbers was undoubtedly favored by them. Many of the proportions in Cistercian architecture are derived from biblical proportions of sacred architecture.

Reuchlin describes the art of kabbala, starting with the first method of numerical computation called Gematria or Geometry. It is the process of digitizing shapes like letters based on some algebraic method, but because of its abstraction and simplicity, it cannot be used freely. Numerical value method, there is only one way is to give each letter a value within 10, if the value is more than 10, it will take its first digital as the final value so "י" (yod) corresponding to the numerical value of 1, 10 such numerical computing YHWH) to 17 ($1 + 5 + 5 + 6$), 17, 26, 52 is the number related

with the name of God יהוה (YHWH).

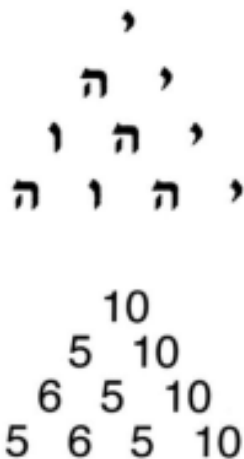


Figure 1.1.19 The Gematria explanation of God's name, the sum of each row is 10,15,21,26 and the addition is 72 (Resource: Architectonics of Humanism. By Lionel M)

A. Noah's ark

It's 300 cubits long, 50 cubits wide and 30 cubits high⁴, and Augustine associates these Numbers with the perfect human Christ, the proportions involved here are 1:6,1:10 and 6:10. These ratios are mentioned by Alberti and are related to the ratios of five columns, such as the Tuscan order is 6:1, the Composite order is 10:1, the Ionic order is 8:1 (8 is the arithmetic mean of 10 and 6), the Doric column is 7:1 (7 is the average of 6 and 8), and the Corinthian order is 9:1 (9 is the average of 10 and 8). He also stressed that there was a ratio of 5:3 coming from the ark.[4]

B. Temple of Solomon

"The temple was sixty cubits long, twenty cubits wide, and thirty cubits high. And the

⁴ And this is the fashion which thou shalt make it of: The length of the ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits. (Genesis6:15 KJV)

porch of the house before the temple was twenty cubits long, and ten cubits wide; And against the wall of the house he built chambers round about, against the walls of the house round about, both of the temple and of the oracle: and he made chambers round about: The width of the lower floor was five cubits, the width of the middle floor six cubits, and the width of the upper floor seven cubits. The inner sanctuary, the most holy place, was twenty cubits long, twenty cubits wide and twenty cubits high"⁵, though Augustine did not mention it directly the exact dimensions of the temple but he thinks of the temple of Solomon as a representation of Christ's body just as the ark was a representation of his body. These proportions are used in the design of churches such as Goa Cathedral. The width of the house on the third floor was one against the wall of the temple Arithmetic progression 5,6,7. The front of the temple has an antechamber with a ratio of 2:2:1, the cube of the most holy is 1:1:1, the main body of the temple is 6:3:2, and the sanctuary in front of the most holy place is 4:3:2. "He built the house of the forest of Lebanon, a hundred cubits long, fifty cubits wide and thirty cubits high... And it was covered with cedar above, fifteen in a row on the pillars There are forty-five... And he made a hall of pillars fifty cubits long and thirty cubits wide." here the main ratio is 10:5:3, which is actually one-sixth the length of Noah's ark, in section

The ratio of each opening is the ratio of the spacing of the transverse longitudinal beams, which is 50/3:10/14 7:3 ratio. The ratio between the two adjacent openings is 7:6, which is an Ad Triangulum. That is, the proportions associated with equilateral triangles, and then Magen David can be inscribed in the plan with the beam length.

⁵ 1 Kings 6:2-6

There is an underlying symbolism. 45 girders and 42 bays may have the important meaning of kabbalah (According to kabbalah, god created the universe from the building blocks of letters and numbers, and kabbalists used the connection between letters and Numbers to discover hidden meanings in the original text of the bible. That is to say, what mathematical philosophy emphasizes is a kind of holographic symbolic function) , exodus Moses asked the name of God, God's answer is יהוה whose corresponding Hebrew letter Number addition is 45.

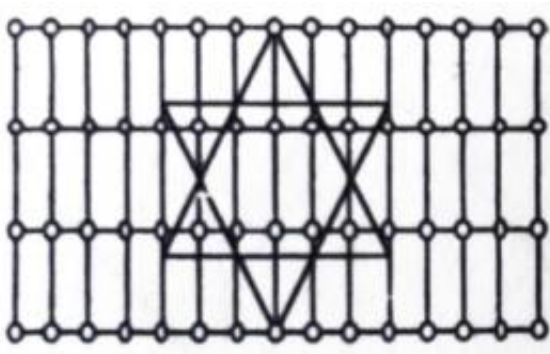


Figure 1.1.20 Solomon temple plan can fit in the star of David

(Resource: Lionel. M. *Architectonics of Humanism*)

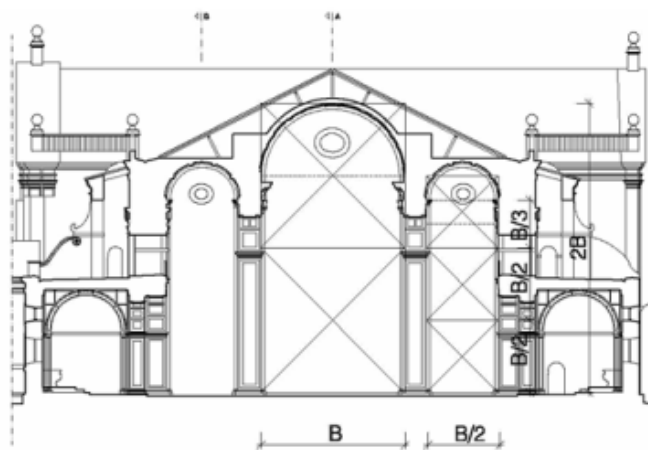


Figure 1.1.21 Goa Cathedral section analysis shows the appliance of the holy proportion

(Resource: Pereira A N. *Renaissance in Goa: Proportional Systems in two Churches of the sixteenth Century*)

C. The tabernacle of Moses

Moses called Bezalel to build the tabernacle for god. The tabernacle has an altar. The altar is five cubits long and five cubits wide, Three cubits high. The courtyard is 100 cubits long, 50 cubits wide and 5 cubits high Here the altar gives a 1:1 and 5:3 ratio, which is related to the interval of the sixth interval on the music. This ratio was used by Villard de Honnecort in the design of Cistercian architecture. "All the curtains were the same size-twenty-eight cubits long and four cubits wide. And he coupled the five curtains one to another, and the other five curtains one to another. Set the curtains together. It shall be a tabernacle." ⁶. The ratio is 28:4 :7:1 and 7:5, which is the approximate integer substitution value of $\sqrt{2}:1$. And 40:28 ::10:7 is also the approximate integer substitution value of $\sqrt{2}:1$. And for the tent of the tabernacle he made curtains of wool of goat for the tent over the tabernacle: eleven curtains he made. All eleven curtains were the same, thirty cubits long and four cubits wide. And he joined five curtains by themselves, and six curtains by themselves... So that the tent shall be joined together as one. "the other proportion, that is, the ratio of the tent together, is 30:24: 5:4. The dimensions of the tabernacle are 2:1 (i.e., 100 cubits long and 50 cubits wide). The ratio of the width of the courtyard to the width of the entrance is 5:2. Lionel March further analyzed Bezalel with the requirements of Kings on the circle and the construction used Ad Triangulum and used the approximate substitution value of $\sqrt{3}:1$ to 26:15. That is to say, the process of constructing the tabernacle in Bezalel used the square root of 1, square root of 2, square root of 3, square root of 4. In addition, Noah's ark has a ratio of 5:3:3 and the beam has a ratio of 5:3, and the tabernacle's plan has a ratio of 2:1 and there may be some kabbalah

⁶ Exdous 26-27

interpretation in it, some of which involves the ratio of the Hebrew letters of the name of god to the number. One half of the boards of the tabernacle enclosure are equal to the Hebrew letters of the name of god. $3:5::10:6=\aleph$; $\aleph=10:5::2:1$; $\aleph:1::1$. And that the addition is also 26 which is important in the design of proportion.

D. The ark of the covenant

The ark that Bezalel made in exodus was 2.5 cubits long, 1.5 cubits wide and 1.5 cubits⁷ high, which was equal to 5:3:3, and the beam of Noah's ark was equal to 5:3, as was the cover of the ark. The table on which the ark was placed was "two cubits long, one cubit wide, and one and a half cubits high," which is equal to 4:3:2. There were also two altars of incense in proportion to 2:1:1, and the altar of burnt offering in proportion to 5:5:3. All of these ratios are directly related to the Pythagorean triangle of 3, 4, and 5. The scale that involves here additionally is 6:10 with 1:1 these scale involved music scale not only also involved human body music scale.

E. Ezekiel's heavenly temple

This is a description of Ezekiel from chapters 40 to 44, and unlike the previous one, this is not a guide to build a palace by man, but a vision of the future kingdom of heaven already built. Since the text is very long, the relevant proportions are listed here. The proportions of the sanctuary and sanctuary are in line with those of the temple of Solomon. But the width of the hall was changed from the 10 in the temple of Solomon to 12, which made the length of the temple $12+40+20=72$ cubits. This

⁷ Exdous 25:10,23

number is the sum of the Hebrew letters of God's name in kabbalah. Moreover, the ratio of the wall opening to the wall is 7:5:3, and 7:5 indicates the Ad quadratum is used. The 5:3 ratio implies the use of the triangle method. 6:10:16 (Ezekiel 40:48); 1:1 (Ezekiel 41:1; Soul; He; 43:16); 2:1 (Ezekiel 41:2); 3:2 (Ezekiel 41:4; 41:22) 1:2:4(Ezekiel 43:13)

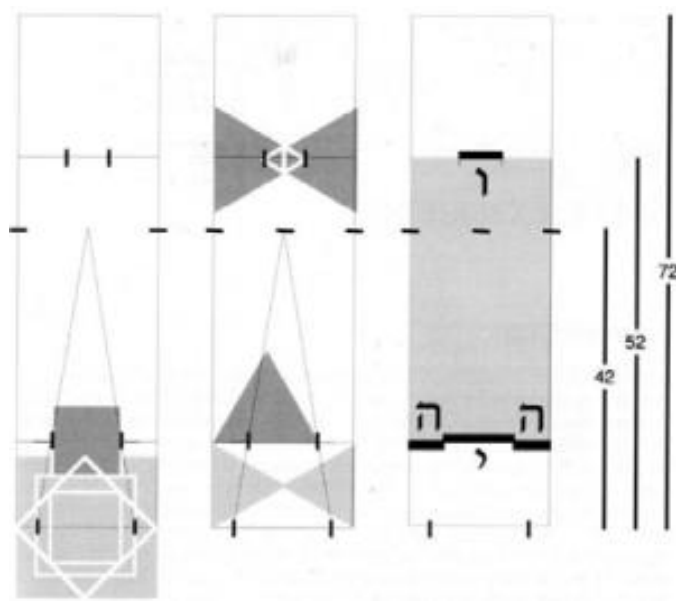


Figure 1.1.22 Ezekiel's heavenly temple used Ad quadratum, Ad Triangulum and Germtria method in the plan

(Resource: Lionel M. *Architectonics of Humanism*)

F. The holy city of new Jerusalem as seen by John in revelation

"And the city lieth foursquare, and the length is as large as the breadth: and he measured the city with the reed, twelve thousand furlongs. The length and the breadth and the height of it are equal. And he measured the wall thereof, a hundred and forty and four cubits, according to the measure of a man, that is, of the angel."⁸

⁸ Revelations 21:16-17

Hereagain using a 1:1 ratio, the measurement of the length, width and height is unknown. The KJV version of the bible translates as furlong but there is no exact equivalent unit. So the ratio involved here becomes even more important, the new city of Jerusalem is 144,000 square furlongs. The height of the wall is 144 cubits (144 also appears as a number symbolize earth in *I-Ching*), and we can see some relations between the height and length of the wall. But understanding deeper relationships requires knowledge of the original text. The Greeks had no symbols for Numbers so they used Greek letters for Numbers. Similarly, the Hebrews and Arabs had no symbols for Numbers at one time. Twenty-four Greek letters and their numerals and twenty-two Hebrew letters and their numerals and twenty-three Latin letters and their numerals were incorporated into the *De occulta philosophia* by Henry Cornelius Agrippa. That is, Numbers can be deciphered into words and names. In the second part of the book he also mentions the magic square representing the nine celestial bodies of which the magic square representing Saturn is the most famous. And he explained the number of each magic square in the way of Gematria. He used Iamblichus's method of dividing intervals to estimate the distance between the celestial bodies, and pointed out that the size of the ark was a metaphor for the proportion of the human body, since God created man in his own image, that is, the prototype of god's own image. *De occulta philosophia* has been mentioned by the abbot John Trithemius and the archbishop of Colonia, Hermannus[4].

1.1.3 Metaphysical-Tao Te Ching, Ferinand Saussure' s Linguistics

Western metaphysics originates from Plato's understanding of logos in ancient Greece. Plato's 'idea' can be seen as a variant of the 'logos'. In later Greece philosophical thoughts, some deemed 'logos' directly as the unity of the 'ideas'

described by Plato. Stoic logos consists of two parts, internal logos and external logos. The intrinsic logos is reason and essence, the extrinsic logos is the language that conveys this rationality and essence.

For Plato and his disciples, truth comes from Logos, the word of God. They thought, the existence of everything in the world is closely connected with its essence. Therefore, the optimal approach should be to avoid the medium of language and think "thoughts" directly. But that's not possible. So the transparency of language became their emphasis, that is, speech should be the complete counterpart of the speaker's real thoughts. Accordingly, Logicism is also called Phonocentrism.

At the same time, writing is considered a secondary, alternative of thought - the substitute of speech, "the shadow of the shadow." Even the signifier of Saussure is, above all, an "imagery of sound". Saussure used signified and signifier to represent idea and sound imagery respectively, Valuing "signified" fully shows the fundamental standpoint of western philosophical tradition. This foothold was called "logocentrism" by Derrida[9].

It was Philo of Alexandria who connected the logos concept of Greek philosophy with the Judeo-Christian "way". In *Tanach*, God creates the world with words. And in Proverbs and Psalms, the author praises the wisdom of God and *Genesis* records the exploit of God's word. Therefore, Philo thinks Greek philosophy and Jewish thought have the same root. God's wisdom, he argues, is the intrinsic logos, the word of God is the extrinsic logos. According to Philo, logos was God's tool for creating the world,

the communication medium between man and God. In the Gospel of John, although god is directly one with the word through incarnation, but its legacy is clear.

The emphasis on language demands precision, and no doubt mathematics satisfied the limits of human knowledge, So the west emphasizes logical thinking. Dialectics is an important way of logical thinking, from which It can be seen that quadrivium and trivium⁹ of Medieval time contain dialectics. The reason why westerners regard drama as the greatest form of literature, Because dialogue in drama contains dialectical and certain factors; Music is regarded as the highest art because of its abstractness, [10]it is the only signifier art. In fact, unlike the monotonous music of other nationalities, Western polyphonic music is a scientific paper with rigorous argumentation and deduction. Propositions are thematic phrases. The process of argument and deduction is the variation of the whole song, while the opponent is the contrast theme. The most typical Bach fugue is highly formal and even logical.

1.2 Architecture as media

Martin Heidegger in his *living dwelling thinking* has put it. "To dwell, to be set at peace, means to remain at peace within the free sphere that safeguards each thing in its nature. But "on the earth" already means "under the sky." Both of these also mean "remaining before the divinities" and include a "belonging to men's being with one another." By a primal oneness the four-earth and sky, divinities and mortals-belong together in one." [11] For him architecture is merely just a functional shelter,

⁹ Quadrivium contains arithmetic, geometry, music and astronomy. Trivium comprises grammar, logic, and rhetoric

but also a media between heaven earth and man. It needs to reconcile the conflicts between the three. So home is not just a place to enjoy but also a place to get restored both physically and spiritually

It is fundamental that architecture should reconcile the relationship with context like climate, typography, function, eco-system etc. And Vitruvius also mentions in his book that functional, economical, beautiful is the basic requirement of an architecture. The discipline also trains the architect to consider as many aspects as possible to solve the problem. It is true one can not wipe out every conflictions, but an experienced architect will always seize the fatal problem and solve it along reconciling other minor problems. It is the physical media layer in architecture. According to Heidegger, there is also a spiritual layer of the media role in architecture.

Every media has got the function to convince the audience something, as it is a information bearer, so it is the same with architecture. Sound travels faster by the media of solid than gas. How the media make it possible to lose less information to fight against the law of entropy? The pyramid is a classical example of the pursuit of eternity and abstraction language. The abstractness of geometry is always the means the ancient tries to break away the chains of time and erosion. Louis Kahn has adopted this ancient tradition to make his works dedication to his architectural god.

CHAPTER II BACKGROUND ANALYSIS

2.1 Architecture as experience

Architecture has created a void for individual to experience. If one compare architecture as music, then it is the sensual part that triggers the human emotion which make it music-like. Phenomenology is a term will be discussed here. The following case studies are about how the architect or artist stimulates the human spirit by utilizing natural element and phenomena.

2.1.1 Light

In ancient tales, light is the symbol of divinity. The ancient Egyptians worship the Sun god and in the Hebrew *Tanach*, light is the giver of orders, and in Christianity, God is light, So light design is always the focus of religious buildings. How architecture could reveal this mysterious character of light? As we perceive everything by light without light, there will be no life and space etc. Light is always a central issue of architecture design. One can barely create any spatial experience with the absence of light.

Rainbow church

Tokuji Yoshioka has got the inspiration from the Chapelle du rosaire which the light comes from the painted glasses. But in his design he makes the intrinsic seven color within visible instead by filtering the light by color glass by means of Prisma. The rainbow church includes a 9-meter-high window made of 500 prisms to reveal the 7 color nature of light.

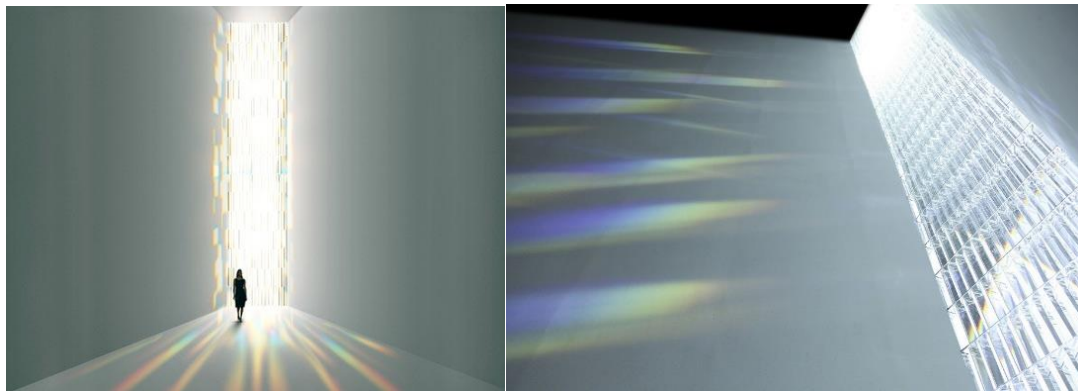


Figure 2.1.1 The prism in the rainbow church

(Resource: <https://www.designboom.com/design/tokujin-yoshioka-rainbow-church-at-spectrum/> <https://publicdelivery.org/tokujin-yoshioka-rainbow-church/>)

Hurvah Synagogue

Louis Kahn is an architectural poet of light. His Hurvah Synagogue is a masterpiece of conveying his love for light and structure. He also mentions "The structure of a room must be evident in the room itself. Structure I believe is the giver of light. A square room asks for its own light to read the square. It would expect the light either from above or from its four sides as windows or entrances." [12] In the *Tanach*, order and light are closely related, Kahn is also a philosopher of light, so he uses architecture as a vessel to express the mysterious nature of light. As it is a Synagogue and his Jewish root, he also refers the plan of the Temple of Solomon like proportion and arrangement. It is very common among the orthodox Jews that they want their synagogue to be a reminder of their holy temple as a symbol of the promise of God.

Kahn considers the skylight very important in his project. Besides the quantity of light, he pays more attention to the quality of light, thus he praises the dynamic nature of natural light compared with the static artificial light. As natural light shows the passing

of time by the changing shadows and variety of illuminance. So natural light becomes a signifier of time and adding the time layer to architecture.



Figure 2.1.2 Computerized graphic perspective, by Larson

(Resource: Kent Larson, "A Virtual Landmark", Progressive Architecture)

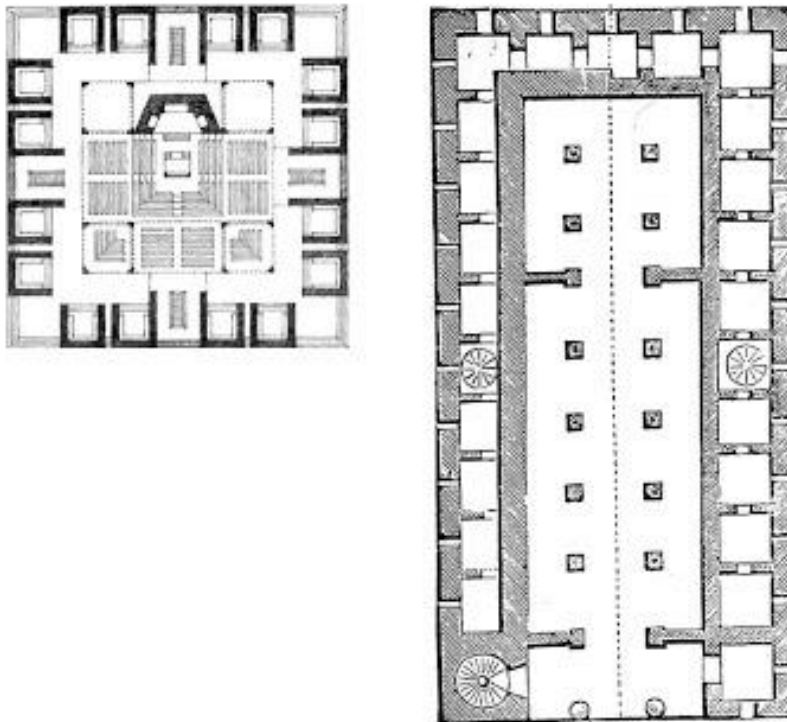


Figure 2.1.3 Plans of Kahn's Hurva Synagogue and Fergusson's rendering of Solomon's Temple; comparison by Akerman after Brownlee y De Long.

(Resource: David Bruce Brownlee y David Gilson De Long, Louis I. Kahn: In the Realm of Architecture)

Terragni's Danteum

Terragni's Danteum is a practice of ideal geometrical form and space. He uses the basic architectural element: wall, column, platform, stair, skylight and ceiling. To create the atmosphere of hell, there is no windows but some vertical crack on the wall. He uses overlaying geometrical arrangement adopting the law of golden ration and $\sqrt{2}$. The space of "inferno" and "purgatory" is divided into a series of squares with the base and top faces by a golden ratio rectangle, which is represented as infinite rising or sinking spiral. The whole building is controlled by a strict

mathematical matrix, which may be hell for Terragni.



Figure 2.1.4 Inferno purgatory heaven in Terragni's Danteum

(Resource: <https://www.tandfonline.com/doi/pdf/10.1080/13602360500115061>)

Cenotaph for Isaac Newton

This is the most significant project of Boullée. He wants to emphasize the sublime nature of architecture. By this geometrical proposal, he made architecture an expressive language to convey something metaphorical. And he got this inheritance from Beaux-Arts architectural training in his time. And Cenotaph for Isaac Newton is absolutely a milestone of this idea. The main part of this architecture is the 150-meter-diameter sphere which rests in a circular base. Even though it is an unfulfilled architecture, it still has greatly great professional significance. The design endeavors to resemble the heavenly movement. And inside, the visitor is isolated too. The apertures in the spheres ceiling let light in, a mimicry of the starlight. 'Boullée's 'Monument intended for tributes due to the Supreme Being'[13] is an expressive emotional-evoking metaphorical symbol. The designer took the function, form light, scent into consideration to achieve the aesthetic effects. It is a poetic architecture and enable people to experience and feel it. He utilized symmetry and concise monumental geometrical form to convey the image of clarity, order and perfection to meet the divine and supreme purpose of the building.

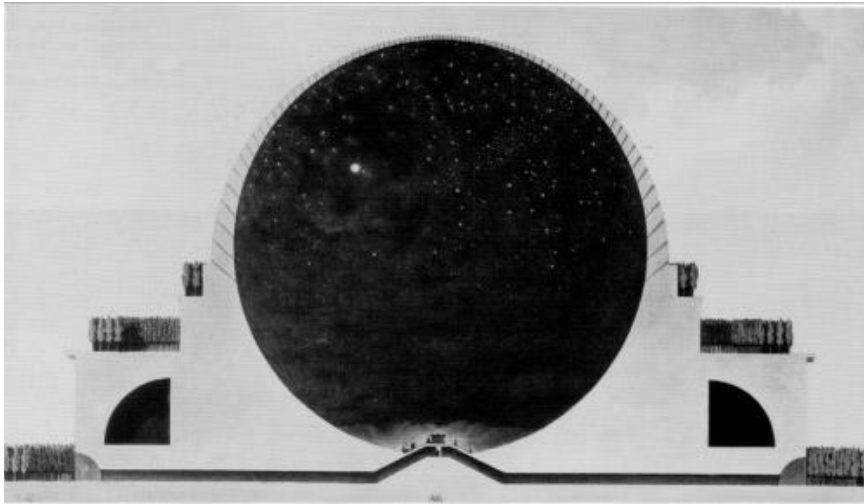


Figure 2.1.5 Section of Cenotaph for Isaac Newton

(Rsource;<https://mythstalesandlies.wordpress.com/2012/10/31/the-temple-of-death-cenotaph-for-isaac-newton/>)

Skyspace

James Turrell is an artist who spend all his career to explore and revel the divine nature of light. He mentioned how the bible verse when Jesus has revealed himself to Paul as great light that even make him blind. James has stated also that "light is not so much something that reveals as it is the revelation," [14] He use light as a way of illumination in itself. He has drawn his inspiration of the pantheon oculus and use the term Skyspace to review this light phenomenon which touches human soul beyond the functional layer of light which make it an inspiration. And he uses artificial light and color atmosphere by modern technologies to give the contract effect to emphasize the mysterious and changeable nature of natural light which is beyond human comprehension. To visit his architecture or installation is like a pilgrimage, one just sits there and appreciates the light phenomenon.



Figure 2.1.6 The skyspace by James Turrell

(Source:<https://www.arch2o.com/the-color-inside-overland-partners-james-turrell-skyspace/>)

The uncompleted house Shinohara

This is a space in the the uncompleted house by Shinohara. A space has no actual function but more related with emotion and it connects other space together. By passing through this space it enhances the spatial experience as it is a connector to

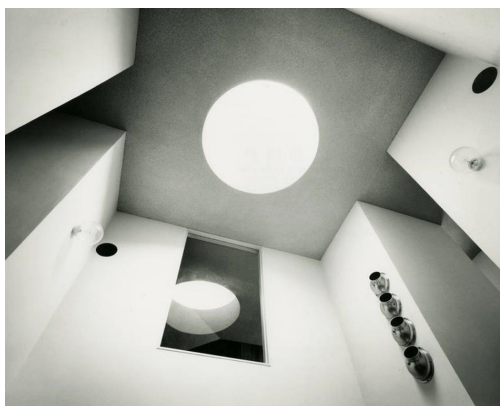


Figure 2.1.7 The non-functional space in the uncompleted house

(Source:<https://www.cca.qc.ca/en/issues/25/a-history-of-references/53966/what-was-history-for-kazuo-shinohara>)

both horizontal functional space and vertical connections with natural light.

2.1.2 Water

Water is regarded as the source of life. It is very interesting that water is a concrete element without definite form which you can touch hear and see. Human body is mainly occupied by water physically. It seems some connections between water and man. And water has different states: gas, solid and liquid which brings many possibilities of creating space by using this element. The most fabulous feature of water for me is its dynamic character. You can hear the water because it is running. Meantime, its dynamic feature is also visible by the touching of wind which generating the glittering light upon the surface. A confined space with water will always triggers something vividly and mysteriously in mankind.

Elizabeth Ogilvie's art installation

Elizabeth Ogilvie is a Scottish artist who uses water as a medium and as a research focus. In her installation, she wants to reveal the universal and timeless feature of water. She wants to make use of the five senses of human to experience the metaphorical nature of water and evoke the journey of returning to innocence. Among her most important works there is Liquid Room realized in 2002. There is a footbridge inside basins with water in a warehouse. She uses the glittering shadows of water on the wall and the sound of flowing water to enhance the experience of water by linking art, architecture and science. In 2006 she created Bodies of Water, whose operation took over from her previous work Which is about the sensorial involvement within an environment dominated by water.



Figure 2.1.8 Water installation by Elizabeth Ogilvie

(Source:<https://followwater.wordpress.com/2014/06/22/the-steady-search-of-water-in-elizabeth-ogilvies-installations/>)

Beauty by Olafur Eliasson

Olafur Eliasson is a Denmark artist and has created the installation called beauty in 1993. He uses a punctured hose spraying a curtain of mist from above in a closed dark room. A spotlight above in the right angle make the optical phenomena visible and he draws his inspiration of the physical laws behind rainbow and creates it in an artificial way. When the visitor approaches the mist curtain in a right angle and direction the rainbow is visible. Actually, it reveals the nature of this optical phenomenon. Just like in Genesis God uses rainbow as a covenant which involves



Figure 2.1.9 The Rainbow generated by Beauty installation

(Resource:<https://olafureliasson.net/archive/artwork/WEK101824/beauty>)

both partakers and both need to take certain responsibilities. Only you behave in the right position you can perceive the covenant-rainbow.

2.1.3 Wind

Wind is an invisible element. Nevertheless, People can feel it and see the phenomenon caused by it e.g. the wind blowing water or the coldness of winter wind. Wind is like a messenger of heavenly movement, thus bringing the change of seasons and time. Wind can be warm or cold, soft or strong. Until now, we find light, water and wind are all natural elements and share the similarity of dynamics. The ancient Hebrew people thinks human is a being with breath which also means wind in Hebrew. In *Genesis* God breathe his spirit to human nostrils and Adam becomes a living-being¹⁰ and his nostrils has breath. If one died, the nostril will have no breath anymore. So life is always connected with some sort of movement. Tadao Ando has built a church which utilize the feature of wind. He wants to make the invisible wind perceived by its audible feature. Actually, since ancient time human already tried to explore the nature of wind and make it into experience.

The aeolian bamboo-organ

In 1861 Borie reported that "...the month of January, which is also a season of gaiety and amusement, is the one in which the Mantra-people (Malayan Peninsula) give themselves over to the enjoyment of music. At that season the wind is blowing very

¹⁰ And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul. (Genesis2:7 KJV)

strong, and the Mantra use it for placing on the tops of the highest trees in the forests long culms of bamboos, into which they make slits between the different nodes, so that the wind, blowing hard into the bamboo, produces very piercing and very different sounds. The sounds become louder depending on the windspeed and the length of the bamboos. This instrument is called the "bamboo ribout" or "storm/noise bamboo". At other times they make from little tubes of bamboo "baling", a kind of weather-cock, which they also fix on on the tops to the trees. The sound produced by these instruments, heard up to great distances away from any habitation, causes something like a sad feeling in the voyager's soul and at the same time the hope to reach a home soon, where he could refresh himself and recreate from his exhaustion..."[15]

The aeolian bamboo-organ is a traditional instrument of people in South-East Asia and on the Pacific islands. People play it for entertaining themselves at the same time, they also use it for religious rituals. as it collects the wind inside the different length bamboo pipe and creates a mysterious music and make the traces of wind audible.



Figure 2.1.10 Aeolian bamboo-organ

(Resource: <http://www.windmusik.com/html/bamborgl.htm>)

"Hou qi (Weather Pneuma)"

"Hou qi (Weather Pneuma)" is the ancient Chinese meteorological method to combine heaven, earth and man. The basic approach of this method is to arrange the twelve pitch pipes according to order in an airtight room, and different length of the pipes filled with dust burned from reed membrane (so-called Jia Fu). The ancients believed that when the position of the sun comes to each Zhongqi, will cause earthly pneuma rise, and the air in the pipe can make the ash of the corresponding pitch pipe raise. Music in ancient China is regarded as the root of all things. In accordance with the traditional method of Hou qi, twelve pitch pipe is arranged according to the twelve Chen(Like the shadow position of gnomon), and respectively in different months adopting pneuma meteorological to test musical pitch[16].

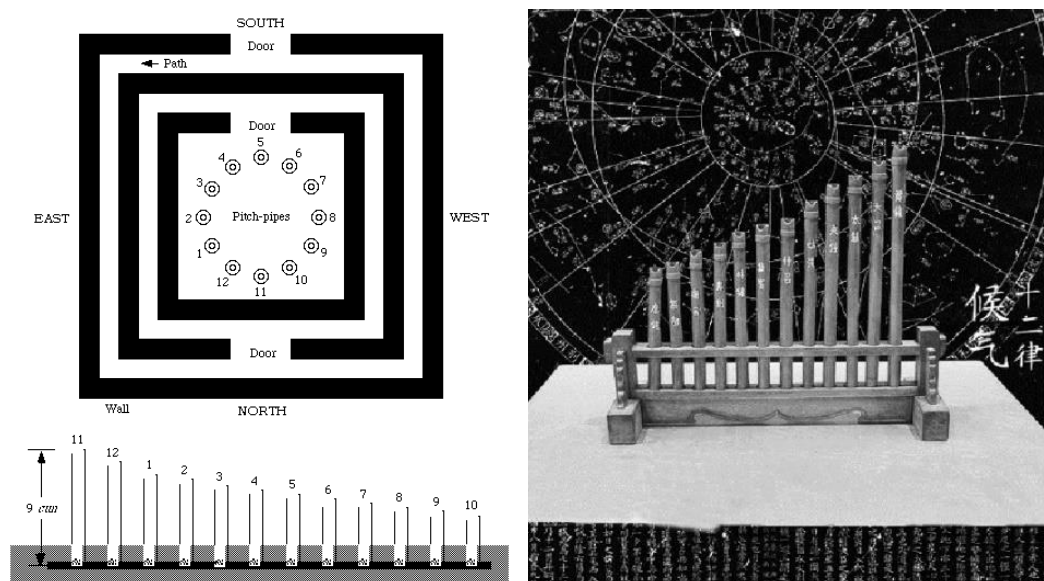


Figure 2.1.11 The pitch tubes in Houqi theory (Source: <http://thnf-web.vm.nthu.edu.tw/history/improvement/ethers/contents/ether01/index.html>)

2.1.4 Mirror

Mirror is an invention since ancient times and people use it to reflect their own

appearance and it is the favorite items for women as they use it to make up themselves. There is also a proverb in ancient China says that people around you is a reflective mirror of your inner personality. Human here is a spiritual mirror. In short, mirror has the reflective feature both physically and spiritually. One mirror can magnify the space and two mirrors facing each other can create the hallucination of infinity. When you give curvature to the mirror, it can deform your image inside the mirror. Some clothes shops also make use of this trick in the mirror so as to make the customer look nicer. Artist and architect use mirror to create dramatic illusions. Sometimes this kind of visual trick can make human lost orientation and perceive wrongly. It is very interesting to explore the experience created by mirror. Sometimes the mirror also tells us a truth -what you see sometimes is not genuine.

Infinity Mirror Rooms

Yayoi Kusama has created an installation called *Infinity Mirror Room—Phalli's Field* in 1965.[17] She uses mirror to multiply the space by combining light and installation together to create perceptual experience. She makes contrast of dark and light, finite and infinity to make the concept infinity visible



Figure 2.1.12 Infinity Atmosphere created by mirrors

(Source :<https://hirshhorn.si.edu/kusama/infinity-rooms/#aftermath>)

ReCasting / Alison Brooks Architects

Alison Brooks Architects has created an installation in Venice biennale 2018 to answer the theme- freespaces. [18] They use mirror to multiply the four inhabitable in housing as 'totems': Threshold, Inhabited Edge, Passage, and Roofspace. Each totem make the visitor experience a particular spatial, emotional and sensory journey to present the meaning and essence of housing. The mirrored spaces also created an illusions of expansion. Meanwhile, the totems, plinth and amphitheater cast an informal stage for gathering and looking outward. Mirror makes the architectural motif emphasized.

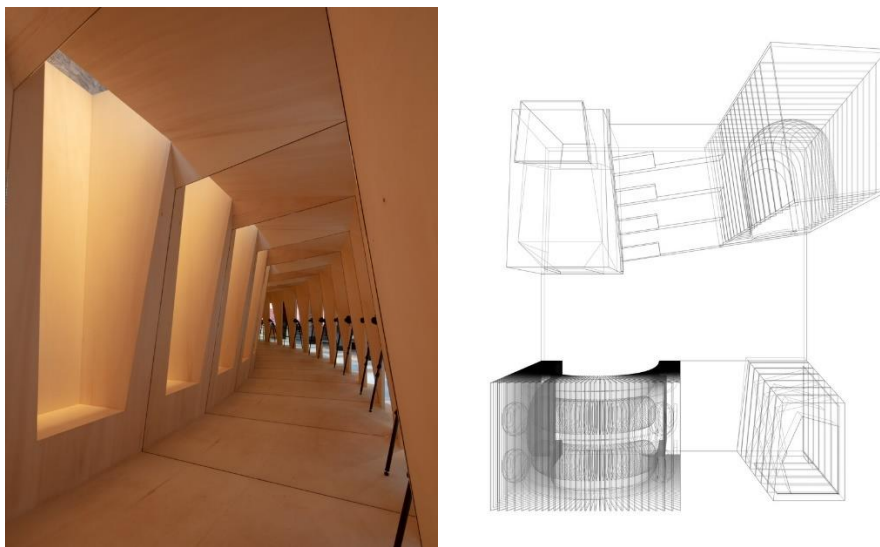


Figure 2.1.13 One installation in ReCasting

(Source: <https://www.archdaily.com/896827/recasting-alison-brooks-architects>)

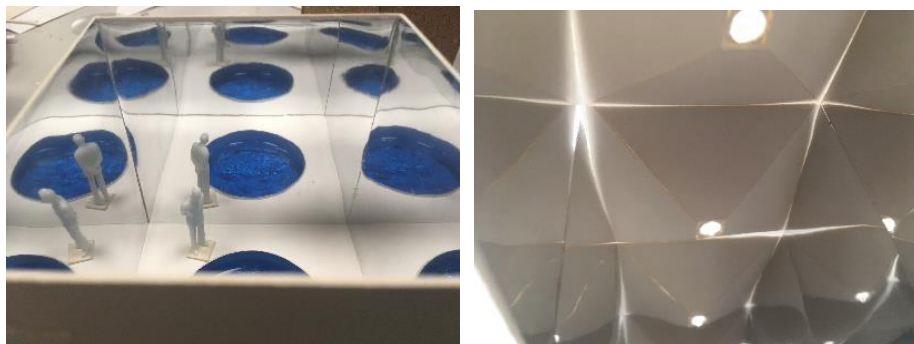


Figure 2.1.14 Mirror experiment of floor and ceiling to create the sense of infinity

(Source: experimental model by the author)

2.2 Architecture as sequence

2.2.1 Philosophy about time

While music is a time-based art, the unidirectivity of time is irreversible, and the symmetry of space is reversible, which leads to two fundamentally different human experiences of time and space. Music is the display of time itself, and music is the intuitive symbol of time. The basic elements of music, "sound note and melody", are equivalent to "morpheme, pronunciation and semantics" in linguistics. Stravinsky mentions, "the music phenomenon provides us with a single purpose: in various things, an order can be established. The only thing that this order requires is a structure".[19]

St. Augustine has great influence on Christian art: one is the principle of music; modulus and the mathematical principle mentioned in *De Musica*. Secondly, he thinks that music and architecture are sisters and children of Numbers. Architecture reflects eternal harmony. Music and architecture are based on perfect proportion, which is the source of all aesthetics. His teaching confines design with metaphysical doctrines and mathematical laws.[10] Music is about a world that we can't hear, and architecture is about a world that we can't see. He thinks music is the king of art, because music is often associated with the essence of things. Both music and architecture have the hidden symbolic meaning of mathematical proportion. Architecture and music transcending the senses, containing multiple meanings. Therefore, Augustine holds that true beauty is metaphysical reality, and that what is

visible and audible is merely an imitation of ultimate harmony. The harmony of the music, expressed in visible proportions, is a reflection of the ultimate harmony, the contemplation of which enables the soul to experience God. Formal language conveys insights beyond the visual world.

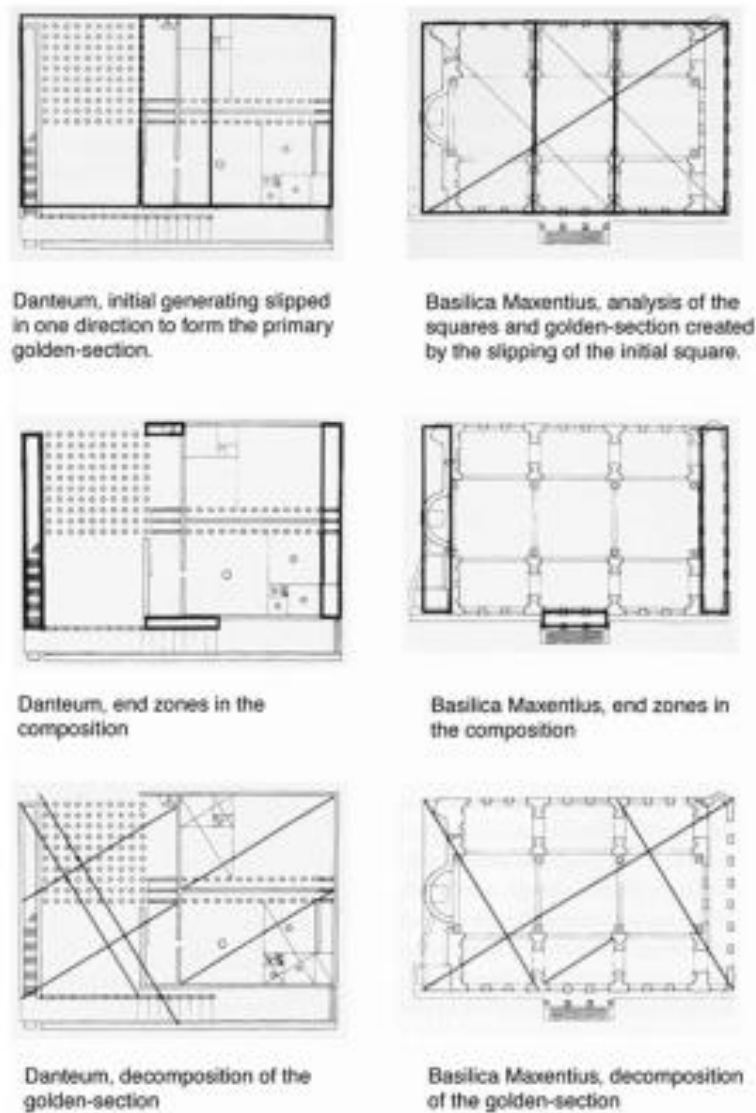


Figure 2.2.1 Schumacher's proportional comparisons of the Danteum and the Basilica Maxentius.

(Source: *A Study in the Architecture of Literature*, T. L. Schumacher)

The Ancient Chinese combine number theory, music theory and measure theory

together. They define the measurement of space from the timeliness temperament and measure the climate from the timbre. They combine the calendar of timbre and time.

Ancient Chinese building is decisive influenced by Yi-logy world view, always adhere to the "Change" rules, does not stress the absolute scale, but with the "Bay" or the idea of "courtyard" as the unit to express scale, using a certain type or classic proportion, under the concept of "Time leads space" shows a strong tendency to musical experience.[20]

In philosophy, the "Taiyi" is Tao which in ancient times are endowed with high status, it gives birth to everything, and everything imitates it. It performs the operation of heavenly bodies. "Taiyi" can be understood as an abstract law, can also be understood as a representation of deities, behaviors of man and all kinds of various artificial models of the universe should be according to its order. As a result, architecture should also follow its order, especially significant architecture in ancient China. Polar star is considered to be the center of heaven, the symbol of "Taiyi", the heavenly bodies changes rotated around the polar star , "Taiyi" rides "emperor chariot" [20][12] along the four directions lead to the change of four seasons. Jian-Column locates in the center of earth reaching to heaven. According to the Chinese tradition, he must be in the center, the commander of the Yin and Yang and four directions. When it comes to architecture, especially in the idealized Ming Tang, which assumes the existence of such a subject. In fact, the "Changing living space according to the seasons" of the emperor , who is called son of heaven, in the Ming

Tang is to conform to The times of heaven and imitate the "the movement of Taiyi in changing seasons"[20].

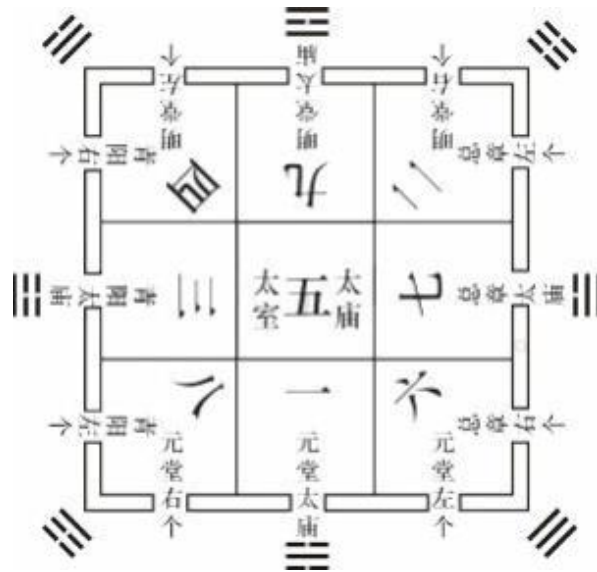


Figure 2.2.2 The schema of You guan tu which has center and four directions is similar to the layout of Ming Tang

(Resource: http://mic_haelqiurian.blog.163.com/blog/static/347238720101113115039624/)

2.2.2 Unit

Unit is the basic cell to compose a work like DNA is simply made of A T G and C biological units. It possesses the potential of generating complexity out of simplicity. Modern architect has explored the possibilities of constructing sequence by unit to form complexity and functions like Charles Moore's Sea Ranch Condominium One. The ancient Chinese also use unit based on their modular system to build gardens which generating musical experience of spatial sequences.

Charles Moore's Sea Ranch Condominium One

This project locates in California and is a project based on unit. He has designed the

living unit which is repeatable and he has got the concept of “altar” in ancient ritual architectural and creates an interior balcony supported by pillars to form a room within room. Under the platform the space becomes a shelter like cozy living space, and above the platform is the bedroom which is the most holy space in the unit, so he make use windows and skylight to add more divine atmosphere to the suspended space.

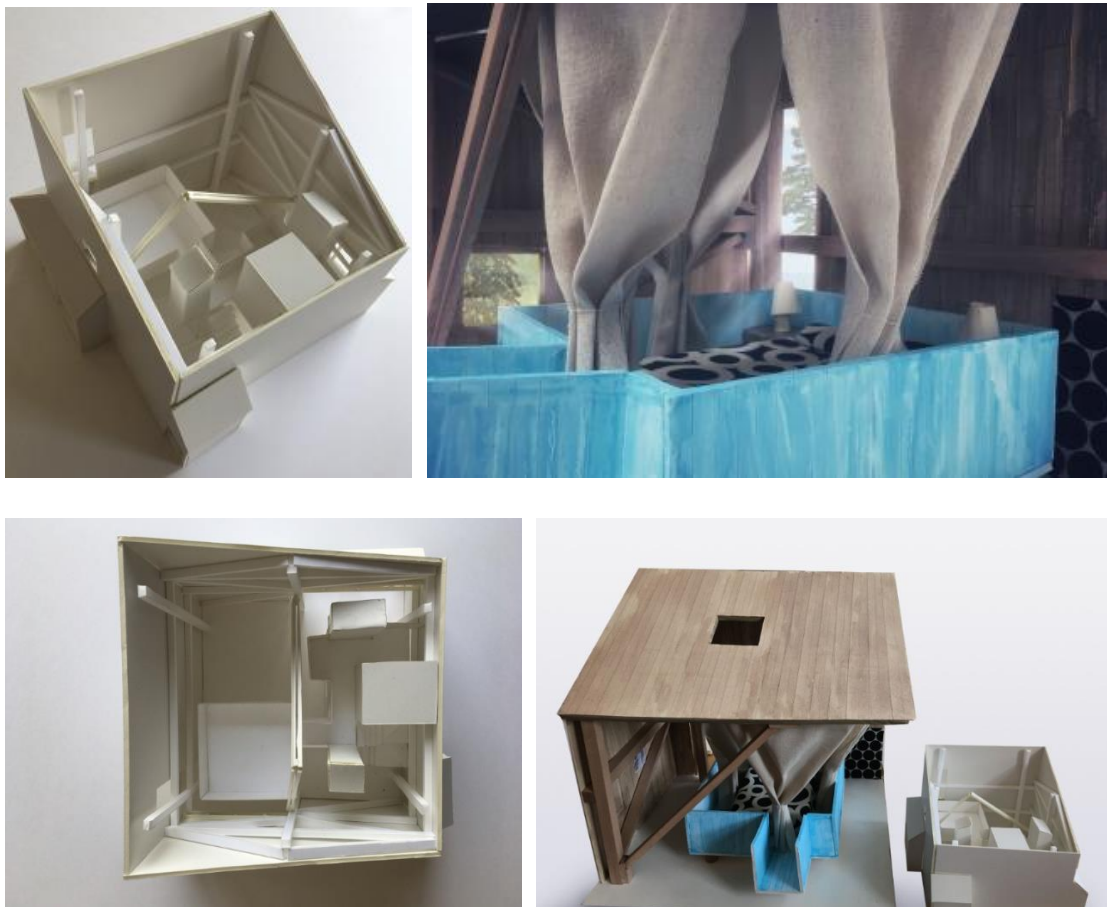


Figure 2.2.3 Case study model by the author of typical living unit of Sea Ranch Condominium One

The general site plan of this architecture cluster is the arrangement of the unit according to the terrain and climate, and they form courtyards which adds time layer.

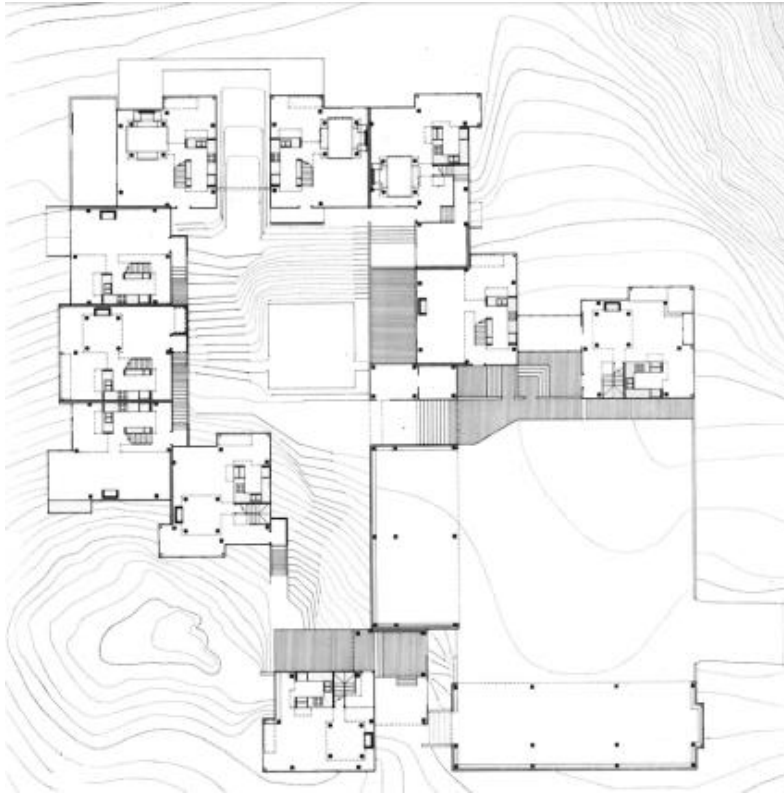


Figure 2.2.4 The plan of Charles Moore's Sea Ranch Condominium One

(Resource: <https://www.pinterest.com/pin/298011700328500736/?nic=1a>)

Trenton bath house

Trenton bath house by Louis Kahn is also a classical example of unit practice. He adopts the motif of circle and square as he also has the background of classical architecture education. And he also shows great passion of the ancient architecture and that partly explain his architecture is always monumental as he searches to dedicate his architecture to architectural God. The clever aspect of Trenton bath house, Louis Kahn solve the functional and structure problems together and seamlessly with using geometrical plans. This project seems very simple but actually full of information and complexity. As he himself acclaimed after Trenton bath house he acquired his own architectural vocabulary and grammar, therefore, no need to

turn to other architect for their architectural language anymore[12].

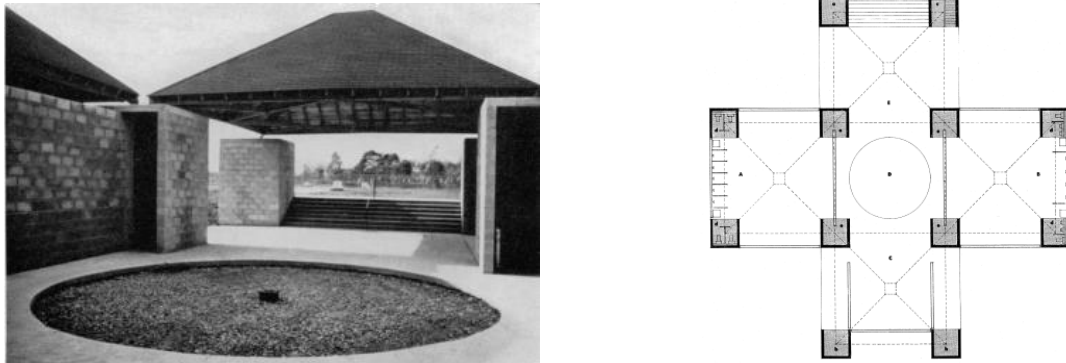


Figure 2.2.5 Trenton bath house plan and view from the courtyard

(Resource: Louis Kahn *Perspecta*, Vol. 4 (1957))

Traditional Chinese garden

Ancient Chinese architecture is modulus system. Actually, ancient china didn't have theoretical architectural books like the western tradition, but did have some regulation book which is about the modulus size of the architecture according to social status etc. The building system and appearance of the ancient Chinese architecture is always the same. But the essence of the ancient Chinese architecture is the courtyard formed by these units so as to form endless possibilities of spatial Experience. Just like the Qin music is recorded by tablature¹¹ detailing tuning, finger positions, and stroke technique which enables people to improvise their own music. In fact even in philosophy, we know you can not put your feet in the same river twice as it is said by Heraclitus, a Greek philosopher born in 544 B.C..

¹¹ Tablature is a form of musical notation indicating instrument fingering rather than musical pitches.

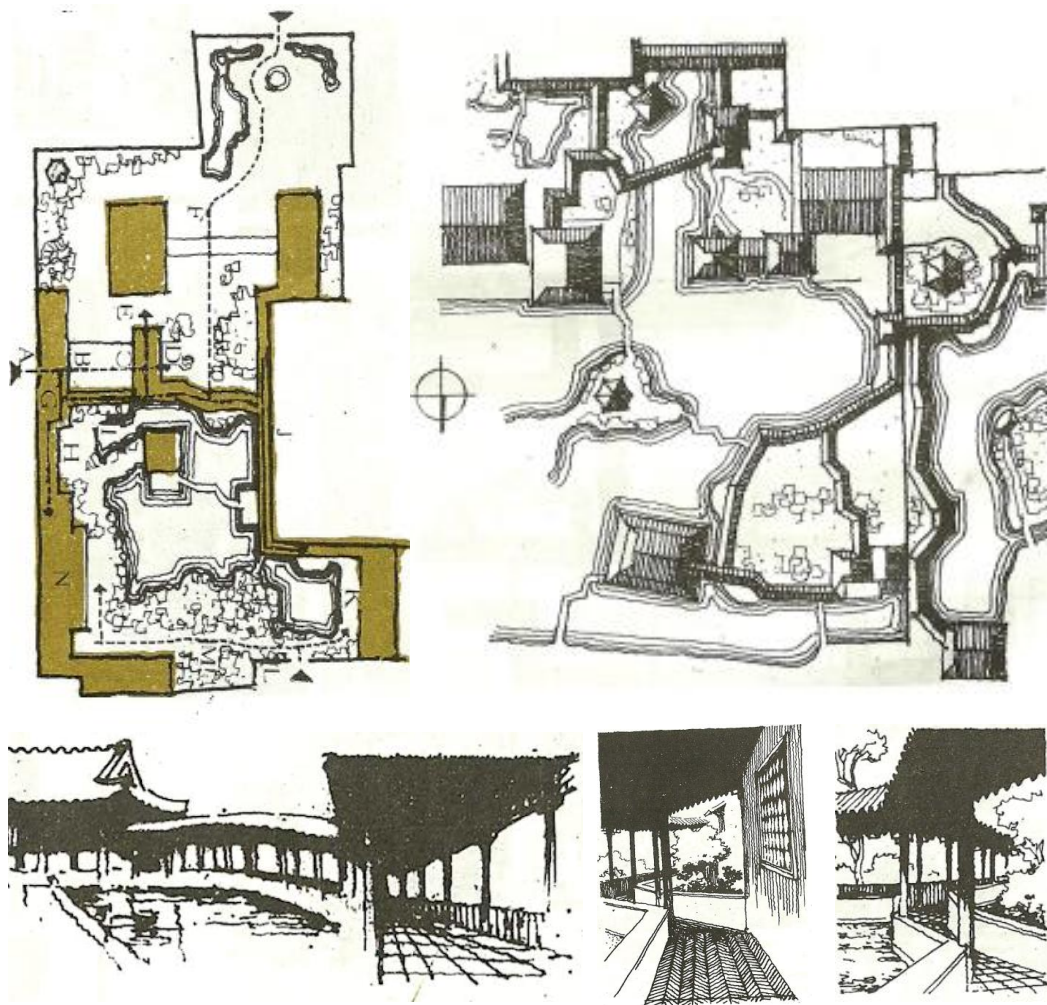


Figure 2.2.7 Typical Chinese garden plan layout and corridor perspective

(Source: Analysis of the Traditional Chinese garden, Peng Yigang)

And this is according to the Yi-ology aesthetics which values the music. Even the solar term is determined by the pitch pipes as discussed before. In ancient Chinese mindset, time is integrated with space, even leads the space.[19] Thus, the ancients valued the time layer of architecture which is the experience when people walk from one courtyard to another. It seems very similar to the ancient Chinese musical notation which is very flexible and only give you the instruction on how to pluck the musical string but does not guide you the rhythm you should play. So different people play the same music, the outcomes are quite distinguishing. In brief, architecture is an



Figure 2.2.8 Bird view of Yi Garden in Suzhou

(Source: Suzhou Classical Garden, Liu Dunzhen)



Figure 2.2.9 Bird view of a traditional Chinese garden

(Source: taken by the author in Traditional Chinese garden Museum)

indeed frozen music here. The corridor is an important element to connect the unit and form various kinds of spatial experience. Inside and outside the corridor will have different spatial perception. Walking along the corridor, the perspective will also alter. And the gardener will plant different kinds of vegetation in each courtyard so the scenery will change according to seasons.

According to the ancient Chinese gardener, it is better to build the garden following the topography. This gives the variety of perspective and height, creating more fascinating and dramatic views.

2.3 Architecture as spiritual symbol

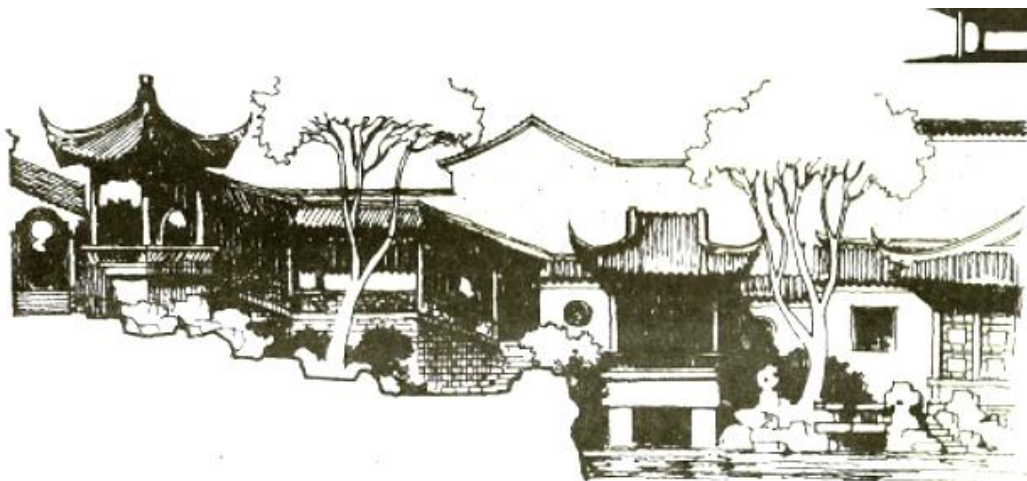


Figure 2.2.10 The courtyard follows the terrain of the site

(Source: Analysis of the Traditional Chinese garden, Peng Yigang)

Archaeoastronomy¹² is an interdisciplinary which studies how the ancient apply the

¹² Resource: <https://en.wikipedia.org/wiki/Archaeoastronomy>

astronomy knowledge into their planning of culture. And there are many discovery of how talent the ancients were as their artificial products shows their rich astronomy knowledge like in the pyramid, Maya sites, Newgrange , Stonehenge etc.

Architecture always plays an important role in ancient times. As the ancients are governed by priesthood. The ritual architecture is always the place the most important ritual practiced. It is like a spiritual symbol of the people. The astrological knowledge of the priests guarantee them priority than the mass and they encoded their knowledge also in their architecture like the ancient Mayan pyramid and the Chinese heavenly temple. Generally, Numerology and Archaeoastronomy is a mean the ancient tries to make the ritual architecture distinguish themselves from normal buildings and a symbol to connect the physical and spiritual. In short, The ancient really pays attention to select the building site and the layout and spiritual metaphors it carries by Numerology and Archaeoastronomy.

2.3.1 The great pyramid

It is always a symbolic architecture in human history both in aesthetic and engineering aspects. There are many hypnosis about the construction of the great pyramid. But until now there is still not enough evidence to show who build it and how they build it. As even today, with the help of modern technology and tools, the engineers still have problems to build such gigantic structure, as the stones are seamlessly interlocked and the four sides is not plan surface but with inwardly curvature. What is more extraordinary is it has many astronomical figures and proportions indicating the builder has great knowledge of mathematics and astronomy, but the

archeological evidence shows that the Egyptians didn't acquire such knowledge like irrational numbers¹³. Recently, some scholar finds the numbers in the great pyramid also coincide with historical events related to God and man. And the scholar called the great pyramid the pillar of Enoch¹⁴. For example, the number seven which repeatedly appear in both *Tanach* and *Revelation* is also used in the interior design.

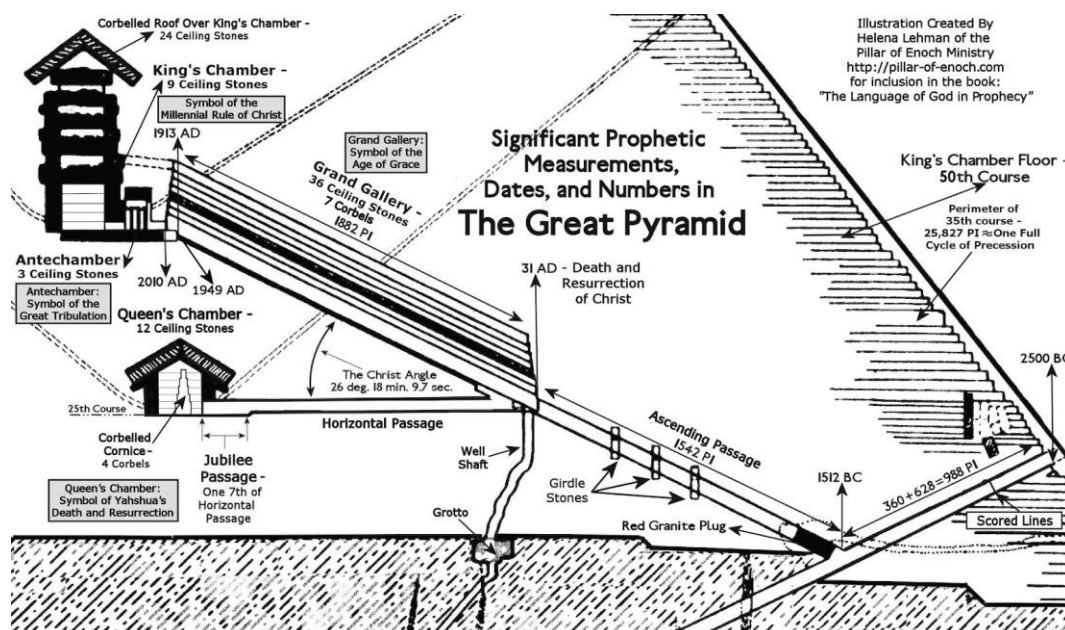


Figure 2.3.1 The numerology Archaeoastronomy found in the great pyramid by Helena Lehman

(Resource: <https://pillarofenoch.blogspot.com/2012/03/my-sixth-prophetic-gem-witness-of.html>)

The king's chamber is empty and is made of granite which is not used for dead people in Egyptian architecture tradition. What's more shocking is these granites weigh 25 to 80 tons and were transported from Aswan, more than 800 km away¹⁵.

¹³ https://en.wikipedia.org/wiki/Ancient_Egyptian_mathematics

¹⁴ "In that day shall there be an altar to the Lord in the midst of the land of Egypt, and a pillar at the border thereof to the Lord." (Isaiah 19:19 KJV) The location of the great pyramid just divide the ancient upper and lower Egypt.

¹⁵ https://en.wikipedia.org/wiki/Great_Pyramid_of_Giza

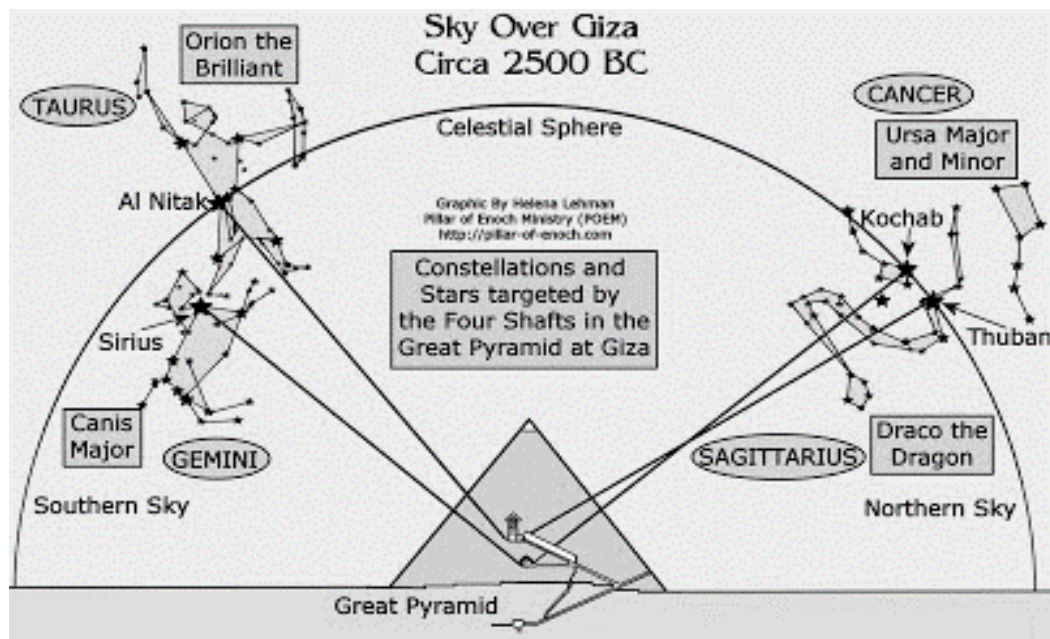


Figure 2.3.2 The ventilation shafts pointing to the constellations

(Resource: <https://pillarofenoch.blogspot.com/2012/03/my-sixth-prophetic-gem-witness-of.html>)



Figure 2.3.3 The Orion layout correspond to the plan of the pyramid groups

(Resource: <http://www.thehiddenrecords.com/orion>)

Mr Bauval overlaid the stars layout of Orion over the site plan of the pyramids and was astonished to discover they matched almost exactly. Wayne Herschel got inspiration from this discovery and found the other missing pyramids to match the whole constellation so that it made Robert Bauval's proposal more complete to match the Orion's belt. His 'missing pyramid hypothesis' was first mentioned in his

book, *The Hidden Records*. [21]

2.3.2 The Pantheon in Rome

The Emperor Hadrian's architects built the famous Pantheon which means temples for all gods. Historian Cassius Dio suggests: "My own opinion on the origin of the name is that, because of its vaulted roof, it actually resembles the heavens". [22]

The light travels within the architecture according to the changes of season, The light path from the oculus changes in equinoxes and travels during autumn and winter in the hemisphere ceiling while, immediately after the March equinox, begins to reach the porch and becomes visible outside of the building. So the equinoxes and to the 21st of April signifies the building's astrological symbolism.

Actually, April was traditionally devoted to Venus, the goddess from whom the Caesar family, claimed direct bloodline, meanwhile, the foundation of Rome is 21st of April. Therefore, the symbolic position of the Sun on this day is "to put Rome among the Gods". If the celebration of the national day took place at the Pantheon, then the entrance of the emperor together along the Sun at noon would have been a symbolic link between the people and the gods. Therefore, the Pantheon, not only an great engineering project, but also was a cosmological masterpiece, an symbol linking heavenly body and time with Earth. [22]



Figure 2.3.4 The procession of light within Pantheon

(Resource:<http://www.architecturerevived.com/the-pantheon-romes-architecture-of-the-cosmos/>)

CHAPTER III DESIGN METHOD

3.1 *I-Ching* philosophy, Christian numerology and symbolism

After reviewing the history, I tried to take in the symbolism both from eastern and western culture to form the vocabulary of architecture. First of all I should find the phonetic unit of the language. Then, I can use this unit to form words and sentences to express. The *I-Ching* generation philosophy gives birth to the primary unit concept which is called Taijie (Word) and its symbol is a circle. The symbol of earth is always square.

According to Chinese Aesthetician Zong Baihua, Chinese aesthetic thought originated from the *I-Ching*, and the most obvious one is the "Bi"(贲) Gua,[23] which means colorless. The aesthetic thought contained here is that the real beauty is to make the entity itself shine. Natural, simple "Bi" is the highest realm, that is, the beauty of its on nature. Chinese Painter and poet Wang Wei said, "The Tao of painting is by



Figure 3.1.1 The diagram of the design concept which comes from a divinatory symbol in *I-Ching* by the author

ink." [20] which only has black and white colors in the painting. Therefore, the Name of my design is called "贗" which means colorless. It is a divinatory symbol in *I-Ching* which has rich metaphor inside a combination of physical and metaphysical meanings. Colorless is also a state of return to innocence and original source. As a result, I want to achieve the goal of simplicity and nature-based as well as the balance of physical and spiritual meaning and life.

3.1.1 *I-Ching* philosophy

Wilhelm Worringer discussed in *Abstraction and Empathy*. There is no thought in the east that can eliminate their consciousness of human restraint. Although the east shows some cognition of uncertain relationship with the universe, and fear, but they do not like the primitive fear that leads to a dichotomy world view, there is a super understanding, that is, their unique "Tao" centralized cosmology[24], as shown in *I-Ching*. the world comes from the division of "Tao" which gave birth to Liangyi and Liangyi generate Sixiang "They see themselves as coming from the one (Tao), which is itself an intelligent life form - the source of all things, a higher intelligence that already has all the requirements of any form of life, so that heaven and earth should be one, as the ancients said," all things are already prepared for me." [5] They are not deliberately to pursue harmony, but according to their world view "Tao follows its own way"¹⁶ which seems like the name of the LORD "I am who I am"¹⁷ admitting that originally heaven and man are together as one, which is why the Lao tze calls for

¹⁶ It mentions in Tao Te Ching by Lao tze

¹⁷ And God said unto Moses, I AM THAT I AM: and he said, Thus shalt thou say unto the children of Israel, I AM hath sent me unto you. (Exodus 3:14 KJV)

"laissez-faire" so the Yi-ology system based mathematics is like a metaphor which its symbol system is done once, but its interpretation will never be finished.



Figure 3.1.2 The generation of Bagua daigram by the author

Each of the hexagrams (Gua) in *I-Ching* deals with the relationship between heaven and man, whose central topics is life. This is the soul of *I-Ching*. *Commentary on I-Ching* extends thought of *I-Ching* and puts forward such propositions as "The circle of life is change". According to the proposition of *Commentary on I-Ching*, nature is a process of endless circulation. Nature is full of vitality, and from here comes the meaning and livelihood of the world. This is the realm of "music". This can be said to be the life philosophy and life aesthetics of *Commentary on I-Ching*.^[20] Therefore, I will also put flexibility as a very essential element in my design. Then the house can be utilized according to the change of owner, function and time. In a sense this project is an unfinished project which invites the user to participate.

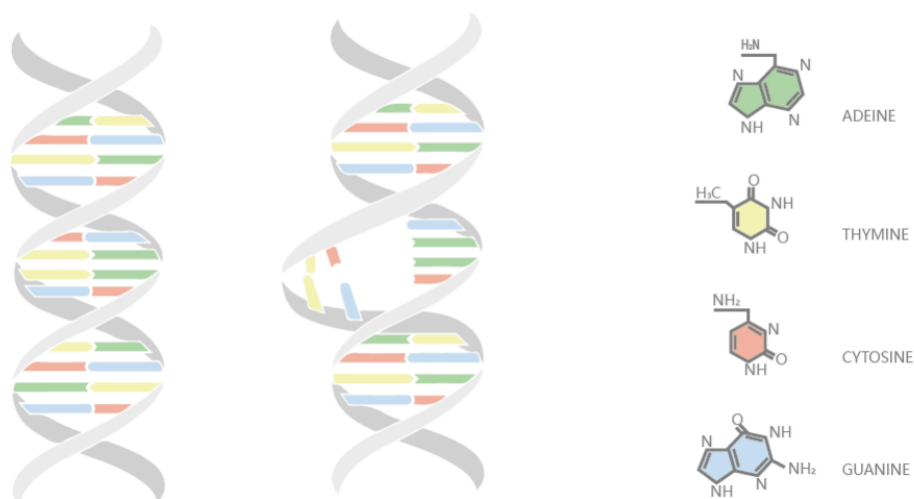


Figure 3.1.3 DNA unit diagram by the author

And Sixiang (literally Four phases) shares some similarities with the life code-DNA. As the permutations and combinations of these primary unit produce Bagua which has got different nature as it is shown by the diagram above. Similarly the molecule is made of package of atoms.

Consequently, I choose to use circle as the symbol of heaven as a primary geometrical unit. And heaven(God) is the father of earth (Adam in Hebrew means earth).

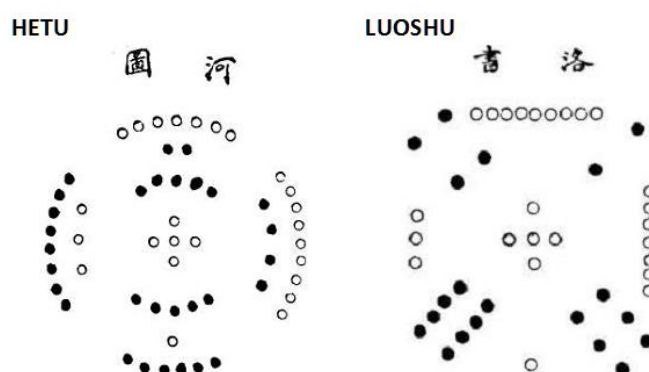


Figure 3.1.4 Hetu and Luoshu is a symbol of heaven and earth

(Source: <https://www.acupuncturesida.com/default.aspx?id=3607&lng=2>)

And the ancient always uses square as the symbol of earth. And the origin of *I-Ching* is *Hetu* and *Luoshu* which is very concise and made of sudoku¹⁸. It also indicates the similar pattern as circle and square is the primary symbol of heaven and earth.

Therefore, I decide to use the square as another primary geometrical unit.

Considering functional issues, square is more livable space and easy to arrange furniture, Consequently, I construct the volume unit by using square.

I have tried some forms of the cubic volume. Because of the colorless concept, I finally choose the simplest and classical house form and a cubic form and another inward inclining roof volume. The roof has two kinds of form: one points towards

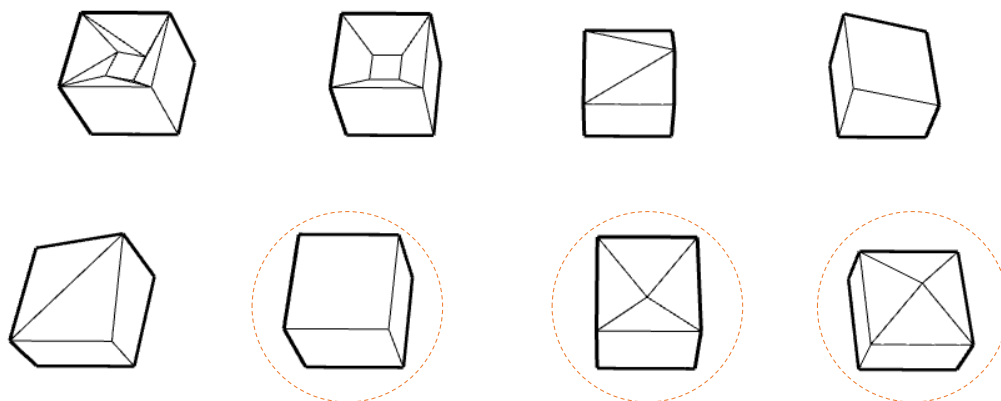


Figure 3.1.5 The experiment of cubic form finding by the author

¹⁸ Ancient scholar Shao Yong puts it in his book *Huang Ji Jing shi: the Observatory of Objects*. "The circle refers to the star, the number determines the calendar, this is where the calendar comes from! The square refers to the earth, where the grid division of the land method comes from! The number of hetu is about circle, the text of Luoshu is about square."

heaven and another points towards earth. The first form is very practical roof form as it is easy to drain the rain and carries the gesture of resorting to heaven. The second form roof is also very practical to accumulate water inside the volume like a cistern and carries the gesture of generously giving. So the first volume unit is a symbol of earth or secular being and the second volume unit is a symbol of heaven or divine being.

3.1.2 Biblical Dimensions and proportion

The generation concept of the plan and section in the heaven unit is based on the symbolical meaning of circle and square and the divine dimension and proportion. The dimension of the unit adopts the same dimension of the holy of holies space in tabernacle. The section 's proportion also comes from ratio between the holy of

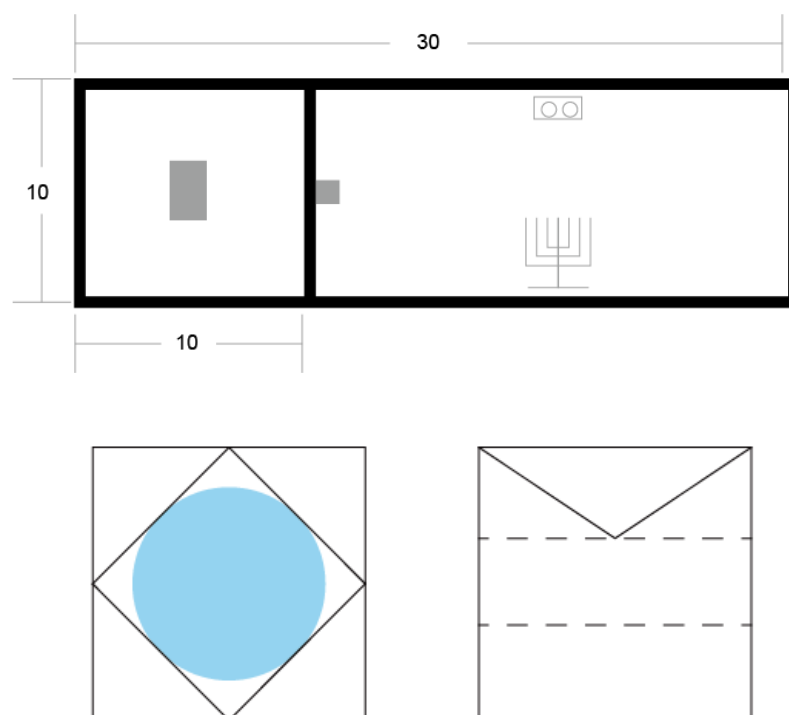


Figure 3.1.6 The Generation of the heaven unit is based on proportion by the author

holies to tabernacle which is 1:3. And the location of the water pool inside is determined by Ad Quadratum. And the generation of the pool which adopts Ad quadratum also carry the proportion of $\sqrt{2}$ and it is a symbol of pilgrimage to divinity according to the Christianity symbol tradition.

3.2 Metaphor and meaning

I adopt the natural elements- water, light, wind and rainbow as metaphor and search the meaning of them in the ancient scripture. I encode all these information inside the space for the people and weather etc. to decode when time comes. Meantime, visitor can not experience all the spaces, which I want to create, at once. As it is a time and weather dependent space. As a result, the phenomena and experience is also a variable depends on many natural parameters, ultimately on the heavenly movement. All these elements bring the dynamic feature to the space which I call it the life aspect of architecture as life is never a static state. The only artificial element I use is mirror in one specific unit as it is a static space with dim light and a space for introspection.

3.2.1 Water -word

מַיִם mayim is the Hebrew word of water. "The spirit of God moved upon the face of the waters" (*Genesis* 1:2) . Apostle John also mentions "in the beginning was the word and the word was with God." And he also associate word with light¹⁹. As light and

¹⁹In the beginning was the Word, and the Word was with God, and the Word was God. The same was in the beginning with God. All things were made by him; and without him was not any thing made that was made. In him was life; and the life was the light of men. (*John* 1:1-4 KJV)

water are the biological source of life. Water has been considered an initial matter both by the Hebrew *Tanach* and the ancient Greek philosopher Thales. Before the creation, water already exist. Praying for rains is always one of the biggest annual rituals in many ancient civilizations, as water nourishes the land and bring food. As a result, water is also always considered as a symbol of blessings from heaven. In general, Water carries the meaning of word, cleansing²⁰ like baptizing by water and the sources of life and blessings.

As mentioned before. Water always carries the metaphor of Word. But water is flexible which is without certain solid form or appearance. And In Renaissance the artists always use column as a symbol of incarnation, for the pillar can visualize the invisible process[25]. Meantime, it is interesting that architectural column is also called architectural order. Order means law or word and pillar at the same time. As a result, column is always associated with hierarchy and even metaphysical things.

So I want to adopt this renaissance tradition to create a space of incarnation²¹. Consequently, I want to create a new kind of column which is flexible and can be visible and invisible according to the heavenly movement. And water just fits perfectly here. As water carries the metaphor of word and this column is a sort of flesh here

²⁰ "I will sprinkle clean water on you, and you shall be clean from all your uncleanness, and from all your idols I will cleanse you" (*Ezk* 36:25) while the author of Hebrews writes "let us draw near with a true heart in full assurance of faith, with our hearts sprinkled clean from an evil conscience and our bodies washed with pure water" (*Heb* 10:22).

²¹ "And the Word was made flesh" *John* 1:14



Figure 3.2.1 Annunciation by Fra Angelico (the upper two), by Julius Schnorr Von Carolsfeld (the third), by Francesco del Cossa (the fourth) Alesso Baldovinetti (the fifth) (Resources: www.pinterest.com)

to indicate incarnation. I just need an oculus in the roof. When the rain (blessings) comes, the circular hole will cut the water into a column volume. This also shows how two-dimensional being generating three-dimensional things and this process is unpredictable and mysterious in a sense. This oculus can also bring steam inside and if the climate will change one day, perhaps, I could also possibly see a column made of ice! As in the ancient times, the roof is also a symbol of heaven and floor is a symbol of earth, so the column is also very import in temples, as it is the media to

connect the heaven and earth²². And interestingly that is also what incarnation in Christianity means which is the only way to connect heaven and earth.

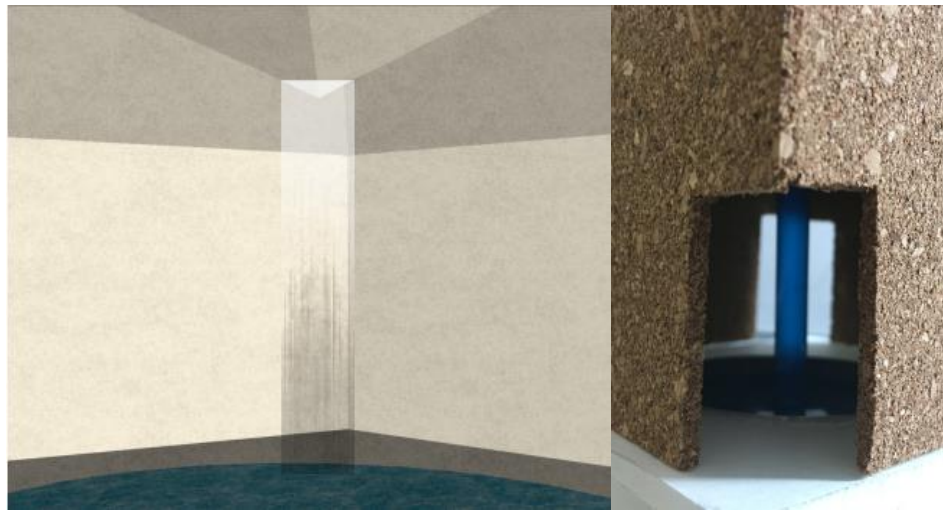


Figure 3.2.2 The water column in the heaven unit when it rains (Resource: by the author)

3.2.2 Wind- spirit

רוח ruach in Hebrew means breath, wind²³. The Hebrew people has found the different pattern of wind to distinguish the seasons. And it always translated in English as spirit. but in the hebraical mind it is the "breath". To the ancient Hebrew, breath carries the uniqueness of the individual person and shows the personality or character of the individual. [26] There are many ancient wind instrumentals which make use of wind vibration. One of influences cause by wind is sound. To make the invisible wind audible is a way to convey the theme of wind. The voice can also be seen as the most sophisticated instrumental caused by the breath (wind) of life. So

²² One can also check the jian-column diagram in chapter I

²³ "and God made a wind to pass over" (*Genesis* 8:1) "The spirit of God moved upon the face of the waters" (*Genesis* 1:2) "And behold I even I do bring a flood of waters upon the earth to destroy all flesh wherein is the breath of life from under heaven and everything that is in the earth shall die" (*Genesis* 6:17) all using the same hebrew word Ruach

wind is a metaphor of life and the invisible spirit to convey the metaphysical part of my colorless concept. And I would use the twelve pitch pipes to be the media to make the wind audible which is the breath of heaven.

3.2.3 Light-God

אור is the Hebrew word of light. "Let there be light; and there was light." (*Genesis* 1:3) "God is light; in him there is no darkness at all". (*1 John* 1:5) In the bible light is always related with order and life as mentioned in the word part.²⁴.

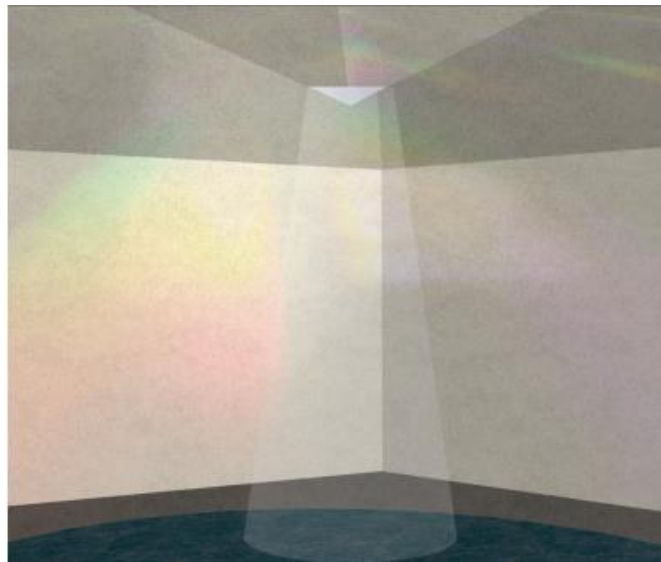


Figure 3.2.3 Prism: when sunny days the space will have rainbow color and become the space of genesis (Resource: by the author)

In the *Tanach* light breaks the darkness and chaos into brightness and order so in Hebrew people's mind. Light is a symbol of order. And in *Genesis* chapter 1 the first

²⁴ Resource : <https://biblehub.com/interlinear/genesis/1-3.htm>

three things God did is to separate (light& darkness, water above& water below, Land& water) and bring everything in order then he fills the water sky and land with living creature. And Hebrew language is a derivative language and words with same root are related with each other. Here the root **אָר** means order(verb) and box(noun). And light indeed helps man to sort out or put things in order and box is also used as a tool to organize things. So, it is likely Louis Kahn as a Jewish architect has this idea that light is connected with order and he also shows his ideas in most of his works about order and light. It is very interesting that the light is made of seven colors and of wave-particle duality just like Christ is both man and God at the same time. To reveal and magnify the nature of light I decide to use prism to reveal the mysterious nature of light.

3.2.4 Rainbow-Covenant

The Hebrew word for Rainbow is **קֶשֶׁת** – Qeshet²⁵ . Besides the meaning of rainbow, it also carries the meaning of war bow. Physically, rainbow is an optical phenomenon created by the diffraction of water droplets. It is a phenomenon generated by water and light. It can only be seen by approaching it in the right position. It didn't really exist in the space but only observed by eyes. It is similar to a covenant which requires rightly participation.

“And it shall come to pass, when I bring a cloud over the earth, that the bow shall be

²⁵ Resource: <https://biblehub.com/interlinear/genesis/9-13.htm>

seen in the cloud: And I will remember my covenant, which is between me and you and every living creature of all flesh; and the waters shall no more become a flood to destroy all flesh." (*Genesis* 9:14-15 KJV) "As the appearance of the rainbow that is in the cloud in the day of rain, so was the appearance of the brightness round about. This was the appearance of the likeness of the glory of the Lord. And when I saw it, I fell upon my face, and I heard a voice of one that spake." (*Ezekiel* 1:28 KJV)

Rainbow usually appears after the rain (blessings). But if the steam is enough, a rainbow is also visible sometimes around the fountain. As the existence of the oculus, during the morning or evening when air is humid it is also possible to see the rainbow inside the space. It becomes the space of covenant.

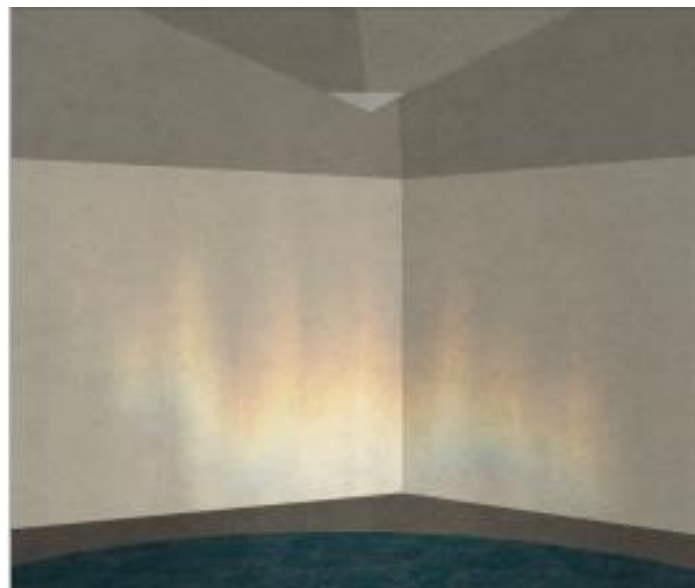


Figure 3.2.4 Rainbow appears when the air is humid (Resource: drawn by the author)

3.2.5 Mirror-Bottomless pit

The Greek word for bottomless pit is ἄβύσσου and it can also be translated as deep

void or chasm.²⁶ ""Then when lust hath conceived, it bringeth forth sin: and sin, when it is finished, bringeth forth death." (*James*1:15 KJV) "And there arose a smoke out of the pit, as the smoke of a great furnace; and the sun and the air were darkened by reason of the smoke of the pit. "(*Revelations*9:2 KJV) The apostle points out the lust or desire is the root of sin which brings curses like disease and death in life and desire itself is like a bottomless pit which can never be fulfilled. Therefore, the Mirror space can be a metaphor of lust or curses which enslave life and this space is designed with a meditation function to visualize sin and then break away the chains from it so to restore. It is also the only static space which has little connection with nature just like life is related with dynamics and death is related with motionless. The mirror brings an illusion of infinity like an endless inferno which is related to lust and death and this space is with dim light so people could perceive the space because this space is a symbol of chaos, so basically no light and this is the space of death.



Figure 3.2.5 The bottomless illusion created by mirror as the metaphor of death
(Resource: model by the author)

²⁶ Resources: <https://biblehub.com/interlinear/revelation/9-2.htm>

CHAPTER IV DESIGN AS PROCESS

4.1 Site analysis

Mallorca is the largest island in the Balearic Islands which belongs to Spain. Tourism is one of its biggest industry. And it is an ideal place to build a summer house as the climate is mild and the typical Mediterranean scenery is appealing. I have a five days excursion there and the rich vegetation and craftsmanship culture has left a deep impression on me. The site is quite rural and suitable to create a utopian like summer house.

4.1.1 General Location of the Site



Figure 4.1.1 Site location (Resource: photos taken by the author)

The site is in Montuiri which locates in central part of Mallorca. And it is surrounded by the small towns: Pina and Montuiri which on the hill and the pre-historic

archeological site Son Fornés. The site is filled with almond trees, fig trees and olive trees. In the southwest corner there's a hut made of stone which is in the entrance of the site. And the site can only be reached by car as it is rural.



Figure 4.1.2 Site situation (Resource: photos taken by the author)

The scenery around is quite vast and the Montuiri town on the hill is very obvious. And the site is surrounded by a 1.5 meters high stone wall. In the southern part is a fence as shown in the right picture below.



Figure 4.1.3 The boundary of the site (Resource: photos taken by the author)

Son Fornés is an Archaeological site from Talayotic times. There are still few talayots (the circular structure) remaining and some ruins of room and broken walls. Since 10th century B.C. until medieval times, people settle here. The Talayotic time structure shows in form of circle and square.

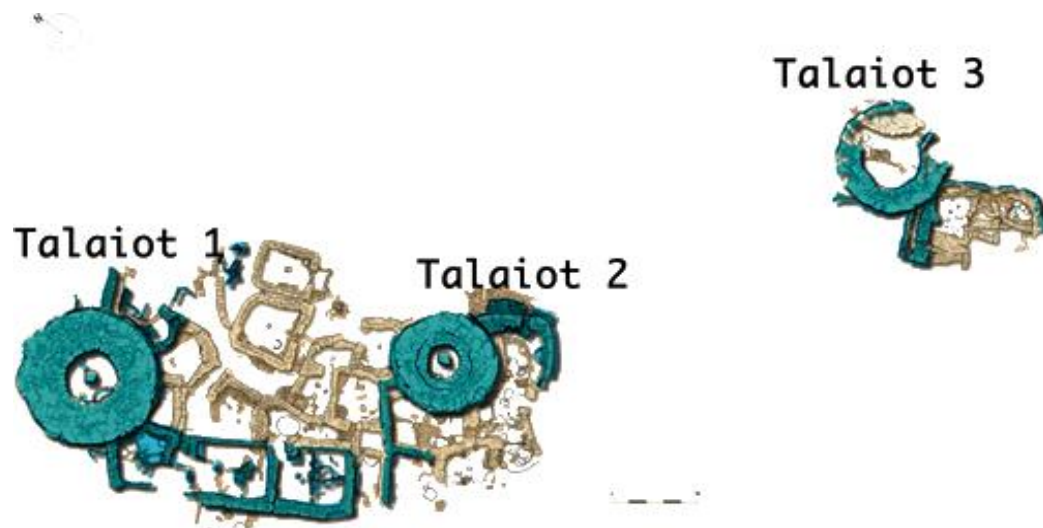


Figure 4.1.4 The Talaiot built in prehistorical times

(Resource: <http://sonfornes.mallorca.museum/el-jaciment/el-poblat/epoca-talaiotica/>)

Talaiot 1 is the largest one in site which is 17 m in diameter and 3.5m in height and has used 2000 tons stone to build the structure. according to archeological discovery



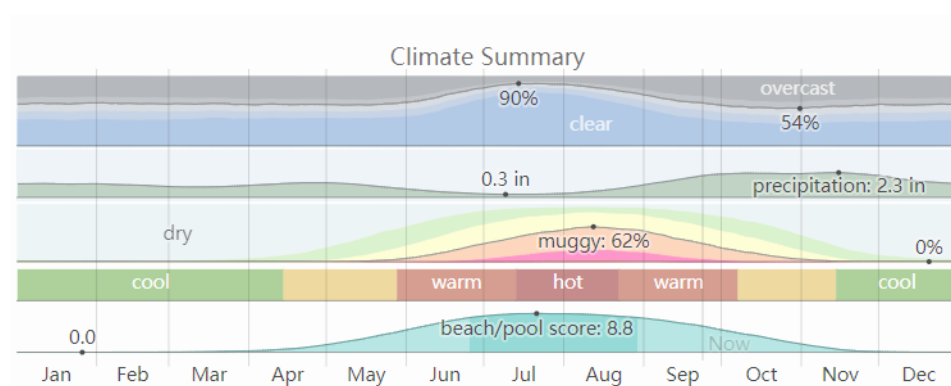
Figure 4.1.5 Narrow and long entrance of Talaiot 1 Seeing Talaiot 1 from a distance
(Resource: photos taken by the author)

in Talaiot 1, it has the remaining of dead animal bodies so it is possible this structure can be functioned as sacrifice ritual space which in ancient times is a way to communicate with heaven.

4.1.2 Climate

As Montuïri locates in the central part of the island, the climate here is mild, and generally warm and temperate. There is more rainfall in the winter than in the summer in Montuïri. The average annual temperature in Montuïri is 16.1 °C. In a year, the average rainfall is 590 mm. It is possible to accumulate rainwater to solve the water problem in site.

According to the chart below, in summer time it is quite muggy so it is important to utilize the wind to enhance ventilation and human comfortable levels. And the wind direction here is mainly southwest according to the wind rose. [27] So this kind of climate has influenced the orientation of the building.



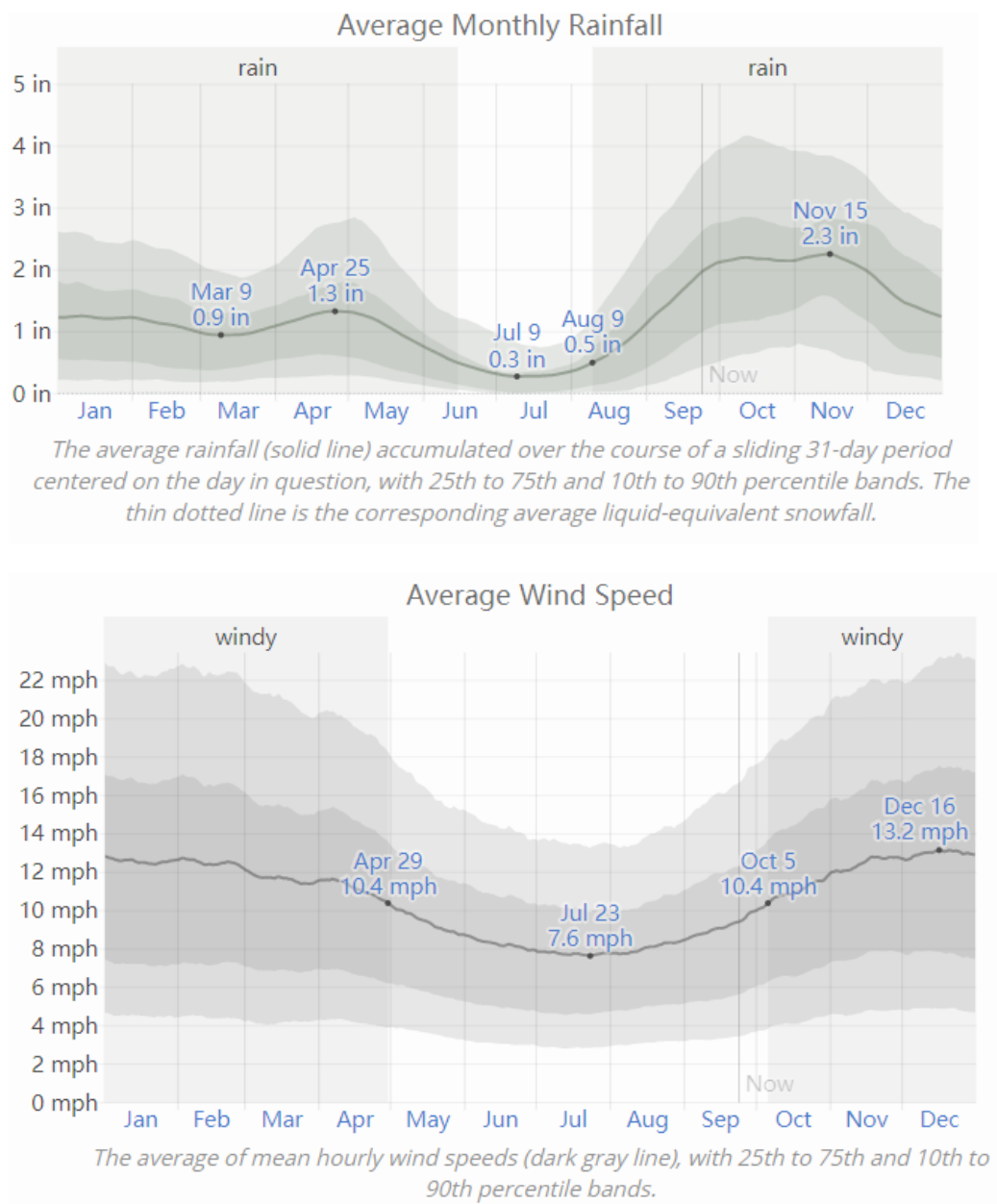


Figure 4.16 The climate chart of the site

(Resource: <https://weatherspark.com/y/47115/Average-Weather-in-Montu%C3%A1-Fri-Spain-Year-Round>)

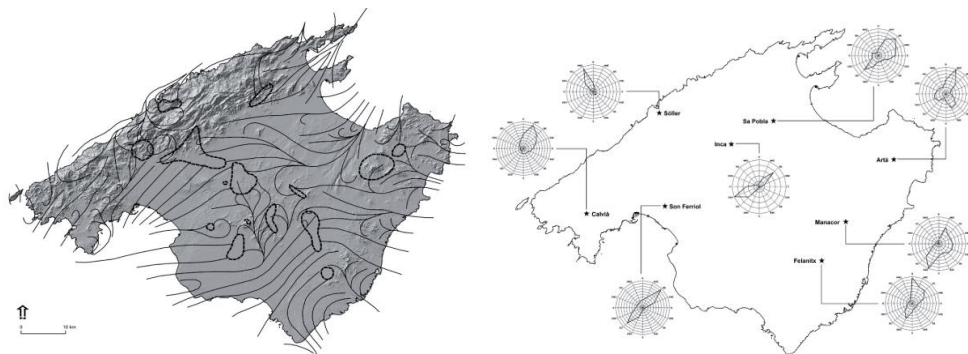


Figure 4.1.7 The wind direction diagram

(Resource:<http://www.usc.es/revistas/index.php/semata/article/download/1152/1652>)

4.1.3 Resources

It is an island full of history. Craftsmanship and local resources are various. And people here also have a good habit of recycling and re-organization. As a result, there are quite rich possibilities to build. But I still prefer a kind of construction which is cheaper and has a natural appearance which also trigger an old harmonic traditional way of life.

Local Artisans

Glass-making has been practiced in Mallorca for centuries. It is thought that it was the Phoenicians who first introduced the art of glass making to the island in the 2nd century BC. Vidrios de Arte Gordiola is a hand-blown glass factory near Palma. I visited this handmade glass factory and I am obsessed by the shadows filtered by the hand-made glasses as it is shown in the pictures. The curvature of the glasses make

the light travel in a different direction and form a painting-like effect.

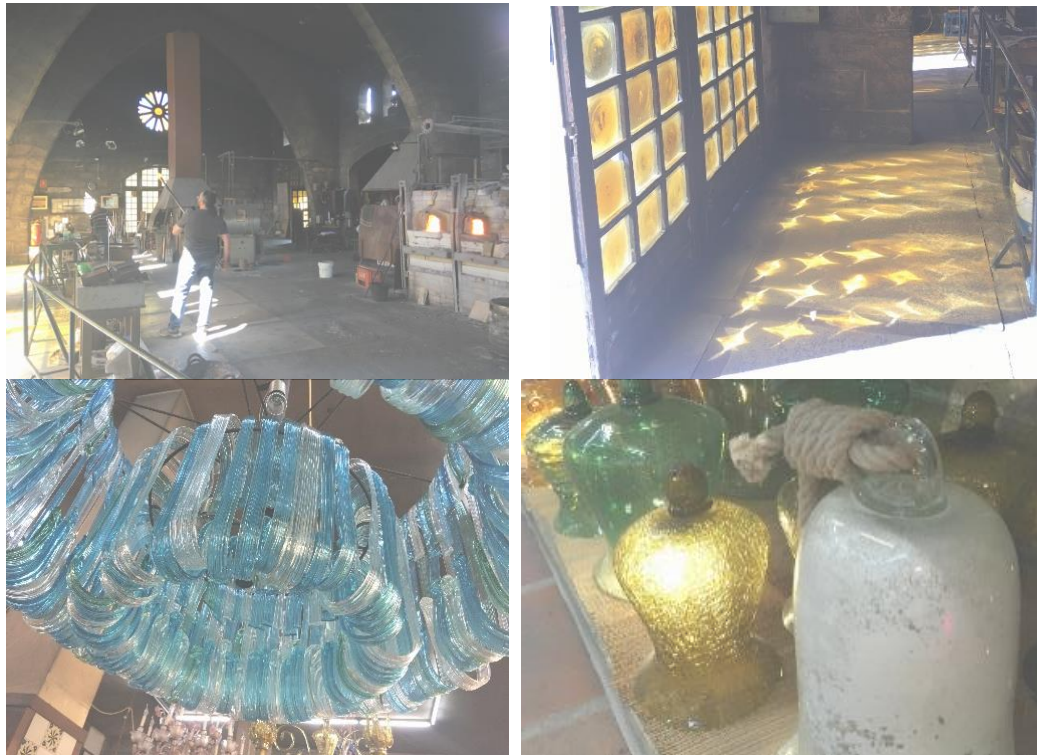


Figure 4.1.9 Glass artisans in Vidrios de Arte Gordiola

(Resource: photos taken by the author)

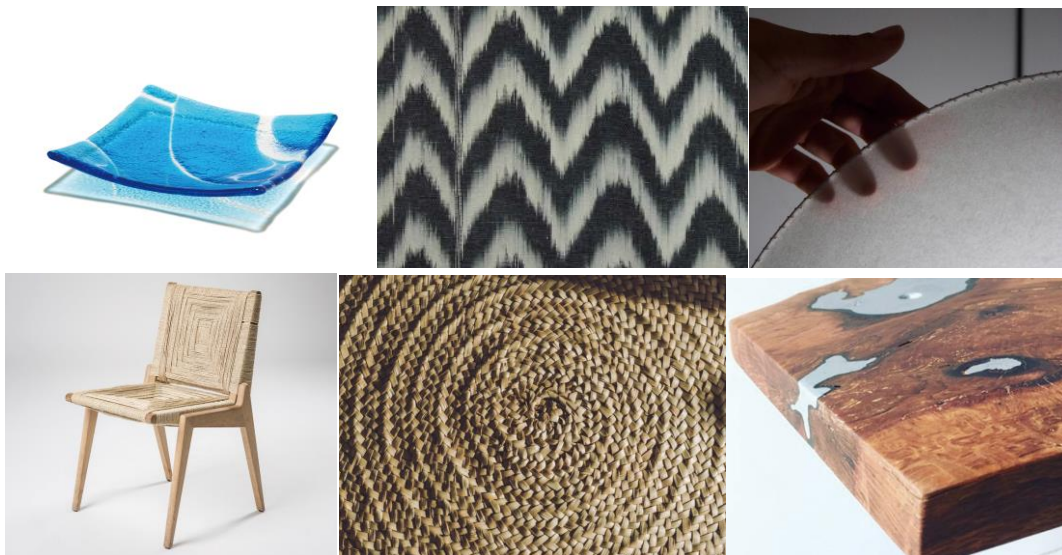


Figure 4.1.8 The local brand products by the contemporary artisans

(Resource: <http://mirenchu.com> <https://www.riera.com/en/78-ikats-mallorcan-fabrics>
<http://toniafuster.com/portfolio-item/ulla> <https://lapeceramallorca.com/en/home/>)

Besides blown-glasswork, there's still a lot of other traditional handicraft industry like textile, pottery and carpentry etc. Roba de llengües is a kind of local textile which dyed in a special way and it can made into clothes, curtains, bed sheets etc. The craft of llatra is to braid the palm thread or bulrush into basket, mattress, shoes etc. The entire process of all this craftsmanship is carried out in-house so it is not very hard process to learn and do it by yourself. The artists there have inherited from their ancestors' wisdom and mix it with modern aesthetics and life-styles and thus creating a set of new contemporary craftsman brands. Above is just some typical brand's product.

Local material

There are many local materials can be used in Mallorca. The marès sandstone is a stone of the Balearic Islands. I have visited one extraction site and according to the limitation of the machine, the dimension is always in blocks of 40x40x80cm. This

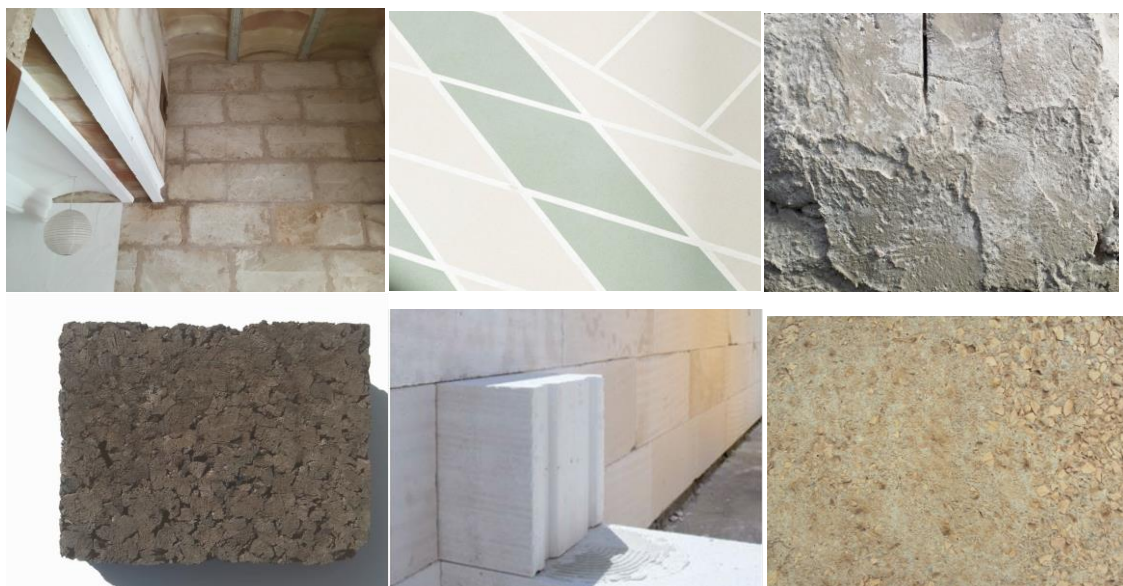


Figure 4.1.10 Marès sandstone, Hydraulic tiles, lime concrete, cork, Y-tong block and Recycled aggregate concrete (Resource: <http://eng.reusingposidonia.com/category/materiales/>)

)

material is usually used for walls and vaults in local buildings, and the colors of the stones may vary according to different quarry. Can Lis by Jørn Utzon has adopted this local stone and he has used this material both for walls and the vault. Handmade ceramics is also a very well-known industry in Mallorca and the artisans apply different colors and patterns to the product. I have visited Huguet factory and see the craftsman manufacture hydraulic tiles and terrazzo items and they have cooperation with architect like Jørn Utzon, Herzog & de Meuron etc. Cork is a local material which is made from pieces of wood. People often use it as finishing materials as it has good thermal and acoustic performance. The local architects also use recycled aggregate concrete and Y-TONG type block for walls and slabs in order to reduce carbon dioxide emissions. Lime is also a very popular material in buildings and people use lime concrete and lime mortar for façade coating on Y-TONG block wall.

And during my visit I also find the locals use cypress branches as fences and pavilion ceilings. Some local ceilings also use bamboo. And the local farmers also collect pebbles in the fields to construct walls. The local architect also uses the local cheap ceramic block to give the wall rhythm pattern by arranging the layout differently.



Figure 4.1.11 The clever usage of local materials (Resource: photos taken by the author)

Actually, the older generation believes there's nothing called rubbish, only things you put them in the wrong places. The spirit of reusing and valuing everything from nature really impresses me a lot. So how to make the most of the local material is an essential part of my design.

When I visited the northern beach of Mallorca, I find a lot of sea weed piled in the coast by the sea wave called Posidonia. It is a kind of sea weed which can be found in the beach area of Mallorca. Local architecture office IBAVI has rediscovered its architecture values of good thermal and insulation eco-friendly material. And the office shares its research of utilizing Dry Posidonia Oceanica as thermal material in its website²⁷ So as to encourage the local architect to make use of it. The local residents believes there's no waste in nature only things misused by man.



Figure 4.1.12 Reusing Posidonia as insulation
(Resource:<http://eng.reusingposidonia.com/>)

²⁷ <http://eng.reusingposidonia.com/posidonia/>

4.2 Design outcome

The design outcome is both to solve the landscape slope and water problems. And also how to use the vocabulary of the unit to convey both physical and metaphysical meanings to respond the concept-colorless. There is an element design in the divine unit as mentioned in chapter 3. As flexibility is considered and discussed in the chapter 3. So the landscape plan is not totally finished. However, I will present one proposal or one possibility of the ultimate site plan in the end.

4.2.1 Landscape

The first stone of the site is the divine unit which in the geometrical center of the square site. For the ventilation sake the unit is rotated to meet the prevailing wind direction. And also the diagonal line of the unit is also pointing to the archaeological site Son Fornés.

“That is why we must distinguish two forms of cause, the divine and the necessary. First, the divine, for which we must search in all things if we are to gain a life of happiness to the extent that our nature allows, and second, the necessary, for which we must search for the sake of the divine. the necessary kind only for the sake of the divine, considering that without them and when isolated from them, these higher things for which we look cannot be apprehended or received or in any way shared by us

-Plato, *Timaeus* “[28]

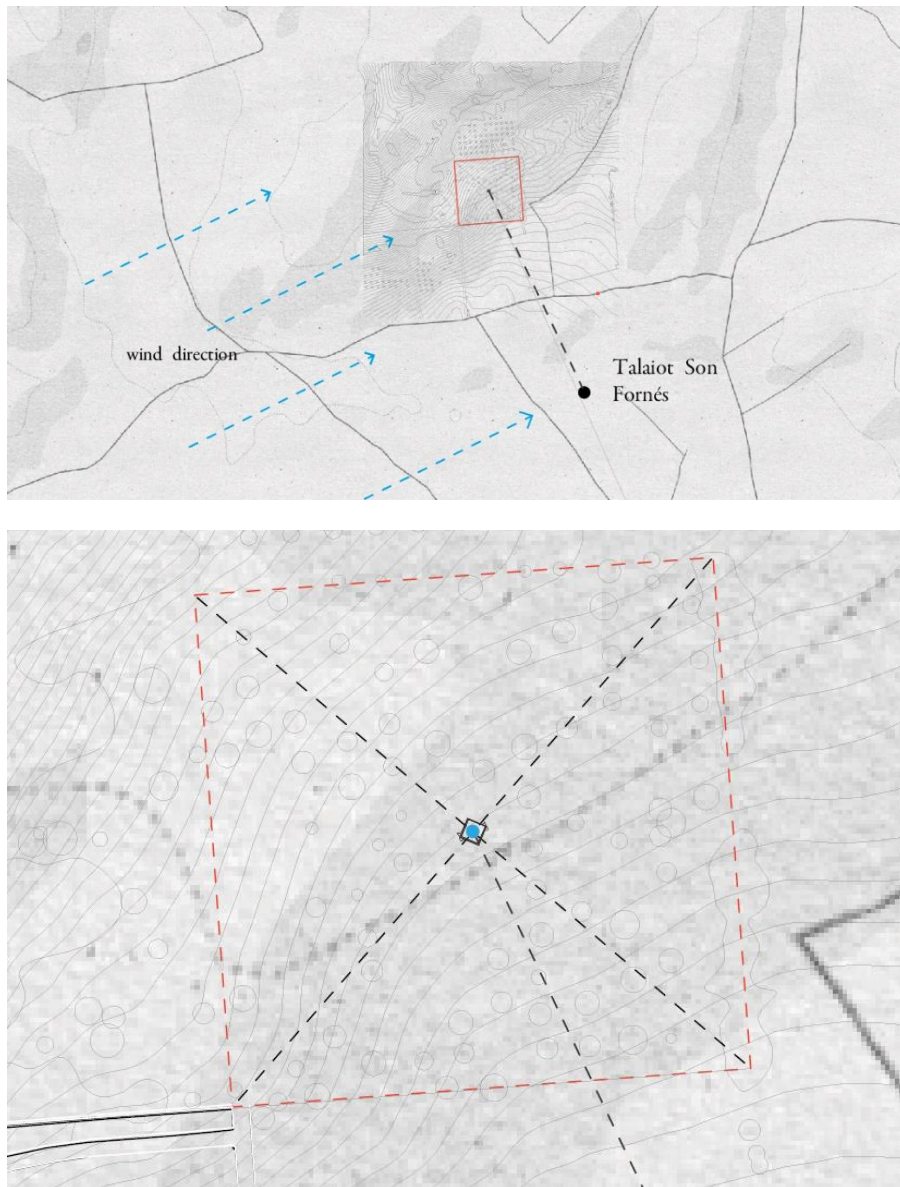


Figure 4.2.1 The location of the first unit

(Resource: drawn by the author)

Plato puts the divinity priority above everything. The divine unit is also the first stone of the site which lay the foundation of the other coming units. The site is quite geometrical and my unit is also cubic volume. Consequently, in the landscape it is like a room (divine unit) within a bigger room(site) both in the shape of square.

The entrance of the site as mentioned before is in the southwest of the site. There will be seven units in the site which carries the metaphors and echoes with the heavenly movement.



The ancient Chinese uses the big dipper to tell direction, as different seasons, it points to different direction and they also use it to determine solar terms. The early compass also adopts this concept and put a spoon as the pointer. And as this is a Summer house, so I use the layout of the position of the big dipper in summer.

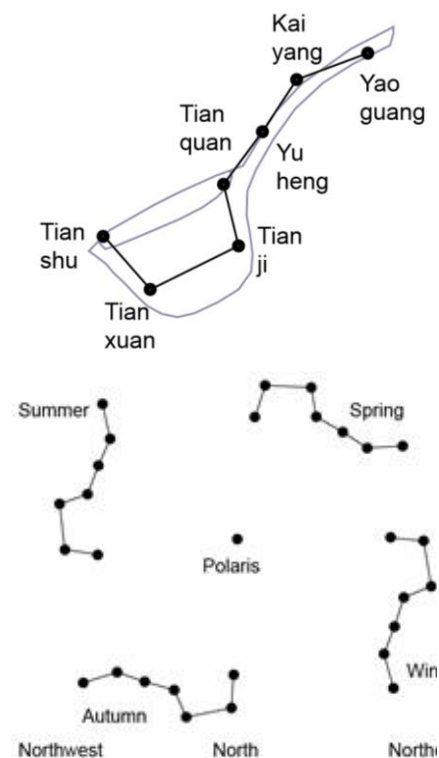


Figure 4.2.2 The ancient Chinese compass's relationship with the big dipper and the position tells the seasons

(Resource: drawn by the author)

The seven unit locates according the summer location of the big Dipper in heaven. In *History of the Jin Dynasty. astronomy Treastise* says , big dipper locates in the north of Taihui, The seven stars names are called Tianshu, Tianxuan, Tianji, Tianquan, Yuheng, Kaiyang and Yaoguang which respectively represent heaven, earth, man time, tone, melody and star.

I use the swale technique[29] to retain water in the terrain area. Swale is the ditch which follows the landscape terrain. It is similar with the agricultural terrace. Its function is to halt the water from running away from the surface. It forms a long thin brook so the water can slow down the process of sinking into the ground and help the plants around it to grow. It functions especially in rainy seasons to maintain the water and avoid erosion.

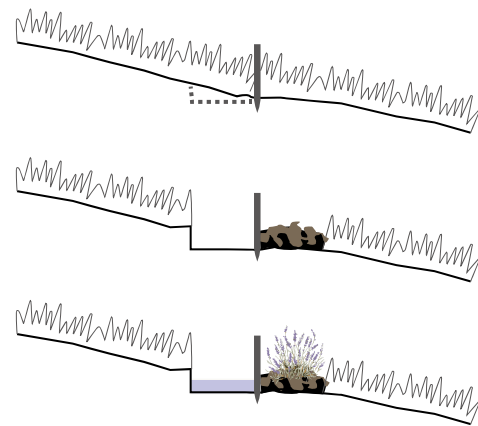
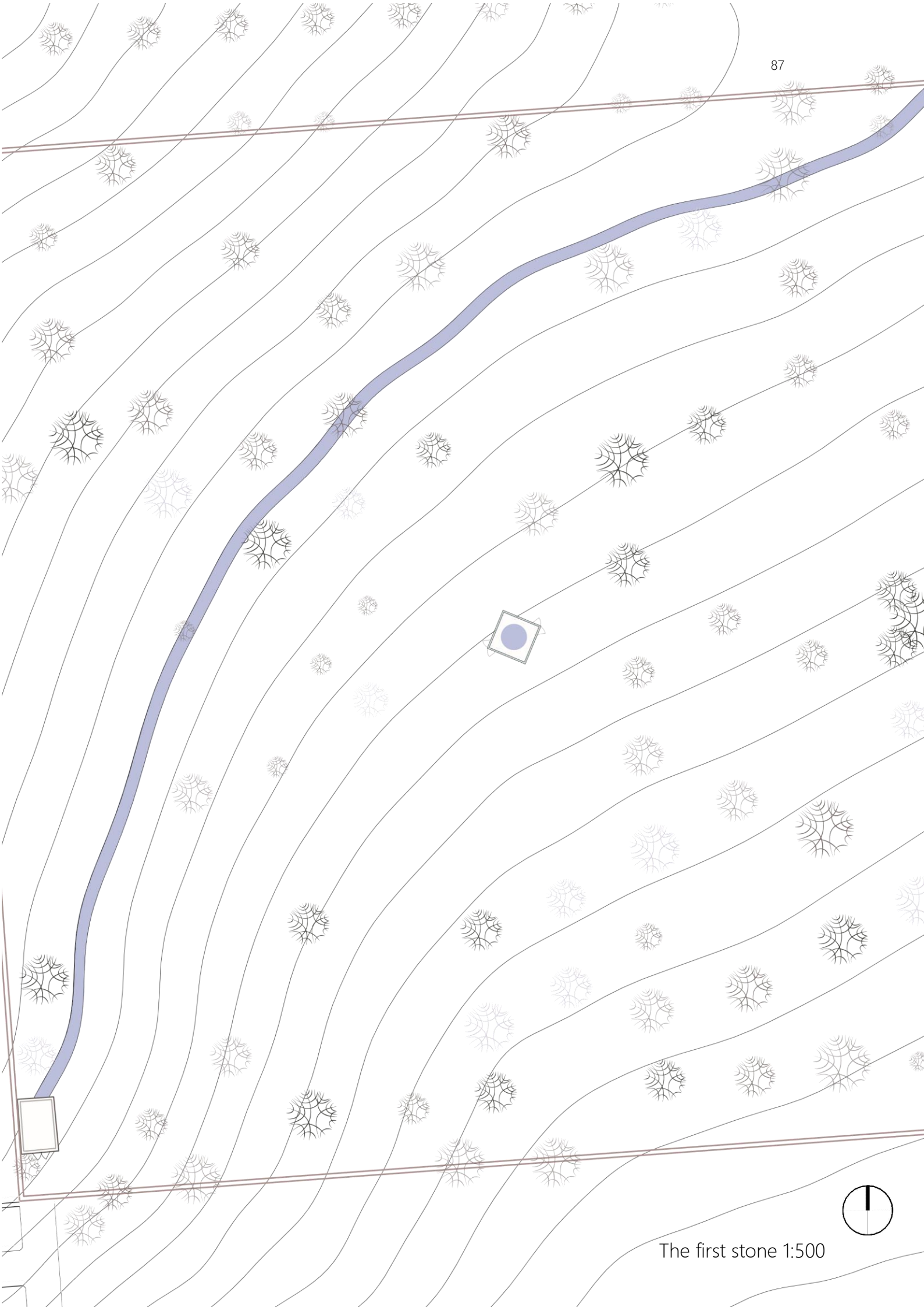


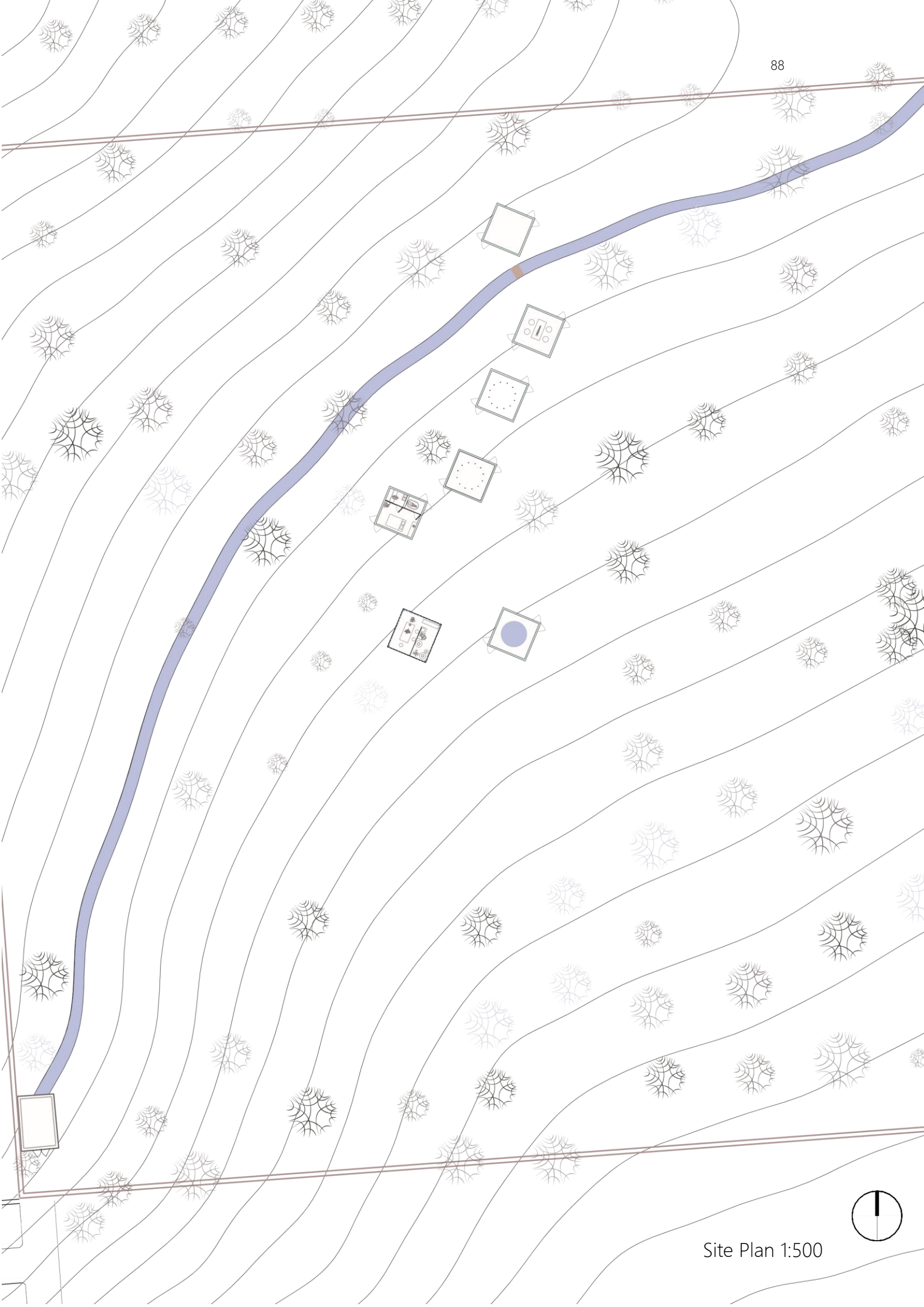
Figure 4.2.3 How swale retain water in terrain

(Resource: drawn by the author)

I place a swale in the contour line which reaches the two ends of the site and cut the plot into two parts and the seven units into 1 and 6 which meets the divine ratio 6:1. As among the godfathers, Augustine specifically pointed out the understanding of the human body music.[6] He related the ratio of the human body to the god-directed construction of Noah's ark, which was based on the ratio of the perfect human body 6,10, which was considered the perfect number to describe the human body²⁸. And this swale also symbolizes the river which appears both in *Genesis* and *Revelation*. And it also separates the 6 orderly units from the chaotic unit.

²⁸ "The ark is a manifestation of the city of god on earth, a manifestation of the redemption of humanity through the body of Christ. The ark's length, width and height represent his fleshly body. Because the length of a man's body, from the top of his head to his feet, is six times the width of his body and ten times the thickness of his body, the ark was built to be 300 cubits long, 50 cubits wide and 30 cubits high."





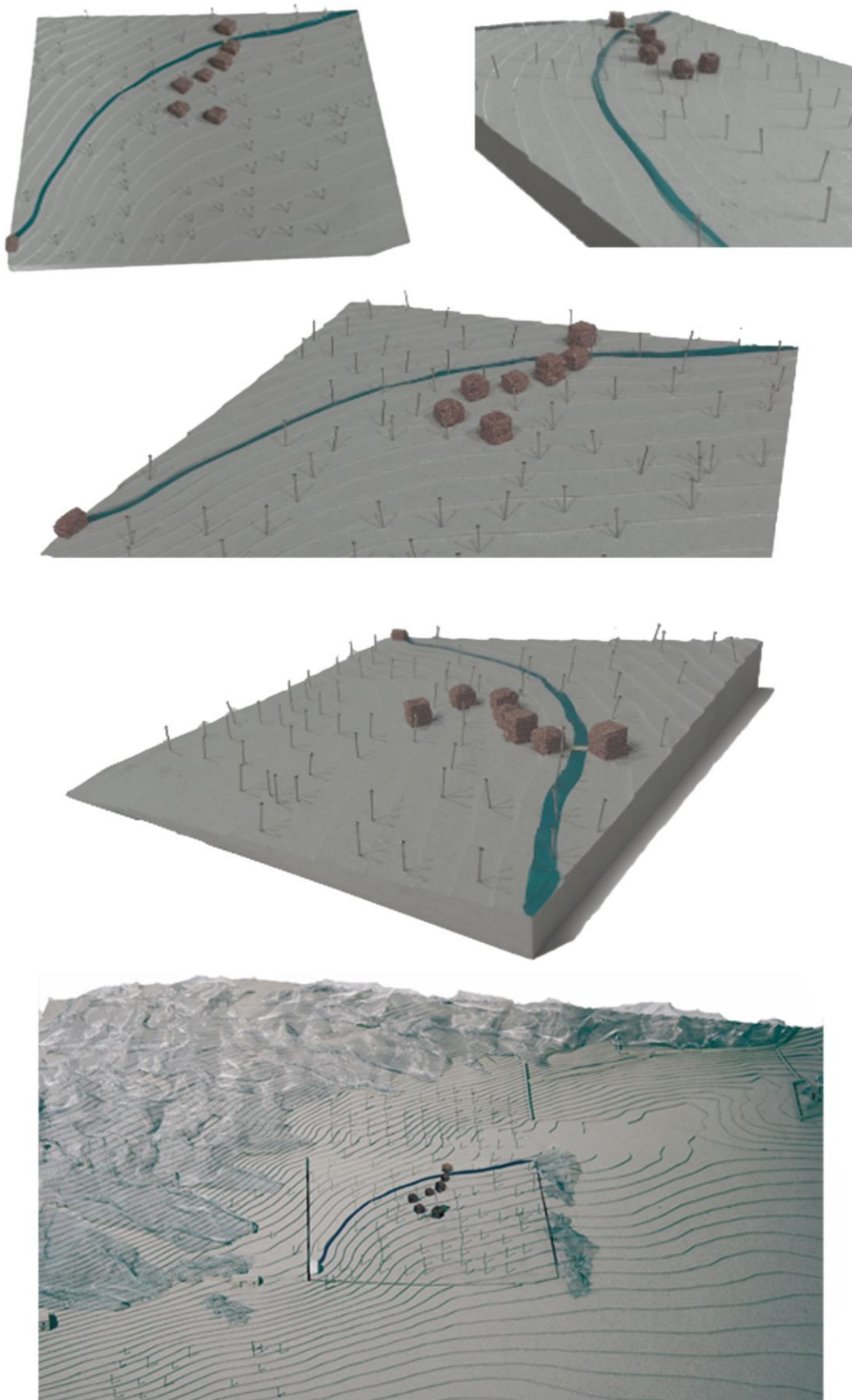


Figure 4.2.4 Site model

(Resource: photos taken by the author)

4.2.2 Space

This project is an exploration towards architecture as a healing tool to restore and find the balance between spiritual and physical life. It contains seven units embodying the seven stars of the big dipper which also carries the metaphor of divinity²⁹.

The first stone is the heaven unit. The other six units include pavilions and closed buildings which creates different layers of openness and privacy, providing a platform for people to communicate with oneself, heaven, nature, family and friends.

Except the earth unit which is a pavilion and connected closely to the environment. The other unit all have solid walls made of cork block. I place the door in the two corners. As the normal door on the wall will always exaggerate itself and diminish the integrity of the cubic space. The benefit of the corner door is when you enter the space your attention will not be attracted by the door any more, and you can feel the purity of the cubic volume as if the door disappears and only the space is in front of your eyes. Meantime, for the purity of the space's sake, I will use no windows. Consequently, the doors serve the function of ventilation too., as I place the doors' axis toward the prevailing wind direction. Meantime, a closed space with thick wall can also have a better micro-climate according to the principle of passive house. The

²⁹ And he had in his right hand seven stars: and out of his mouth went a sharp twoedged sword: and his countenance was as the sun shineth in his strength. (Revelations1:16 KJV) The great pyramid also has the ventilation shaft pointing to the big dipper.

pyramid hip roof will also create a buffering space for air circulation making a better thermal environment.

This design tries to keep a distance from pure functionalism which confines user's behavior and impose the architect's willing to the person, so it endeavors to explore the unlimited possibilities of nothingness. Therefore, I try not to give definite function of the space, so they can change functions according to time and needs. And the practice also shows the possibilities that the client sometimes is more creative than architect to give new meanings and functions to the space.

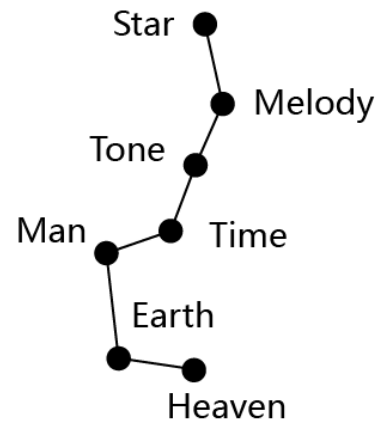


Figure 4.2.5 The Heaven units with metaphors

(Resource: by the author)

A The Heaven unit

As it is a metaphor of the presence of God. Cube is a symbol of man and the circular water pool inside is a metaphor of the word. It is a symbol of incarnation of Christ in shape as he is in human flesh in appearance but within he carries the revelation of the word of God just like the wave-particle duality in light as a metaphor..

There is a very important element design of this unit-prism. As previously I am appealed by the fascinating light filtered by the hand-made glasses in Mallorca, I have considered using the same trick to filter the light , But afterwards, I find prism suits more to my colorless concept as it makes use of the same trick to change the

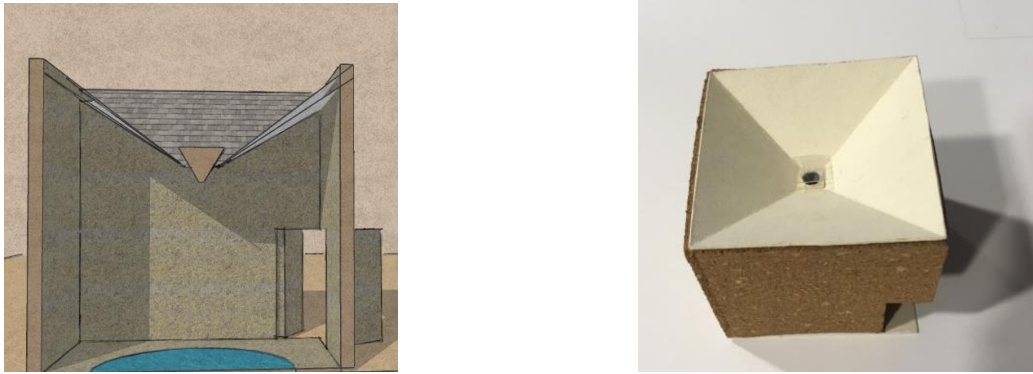


Figure 4.2.6 *The Heaven unit model* (Resource: by the author)

path of light to create certain atmosphere, but it doesn't castrate the seven color nature of light to only one color like the painted glass. Light is the leading role of this space as a symbol of divinity and time-procession. The shadow changes according to the daytime and season. The prism on the ceiling becomes the filter of light to magnify and reveal its seven-colors nature to correspond to the colorless theme which means simplicity. It doesn't equal to simple and rough but carries a more higher-level of compactness and complexity. I have tried at least four possible shapes of the prism as they are shown below. I even think they can be container or solid. If I just use them as vessels filled with rain-water the light and shadow won't be that pure and static as the wind blows the water constantly and when it is hot and dry, the container won't become a prism. Therefore, I turn to the solid versions and made some experiment of the Triangular prism and Pyramid prism as these two give more regular shape of the light. I finally choose Pyramid prism as in the midday, there will be triangular shadows on the four sides of the walls which shows more combability of the cubic volume space. Meantime pyramid itself also carries the divine Archaeoastronomy proportion.

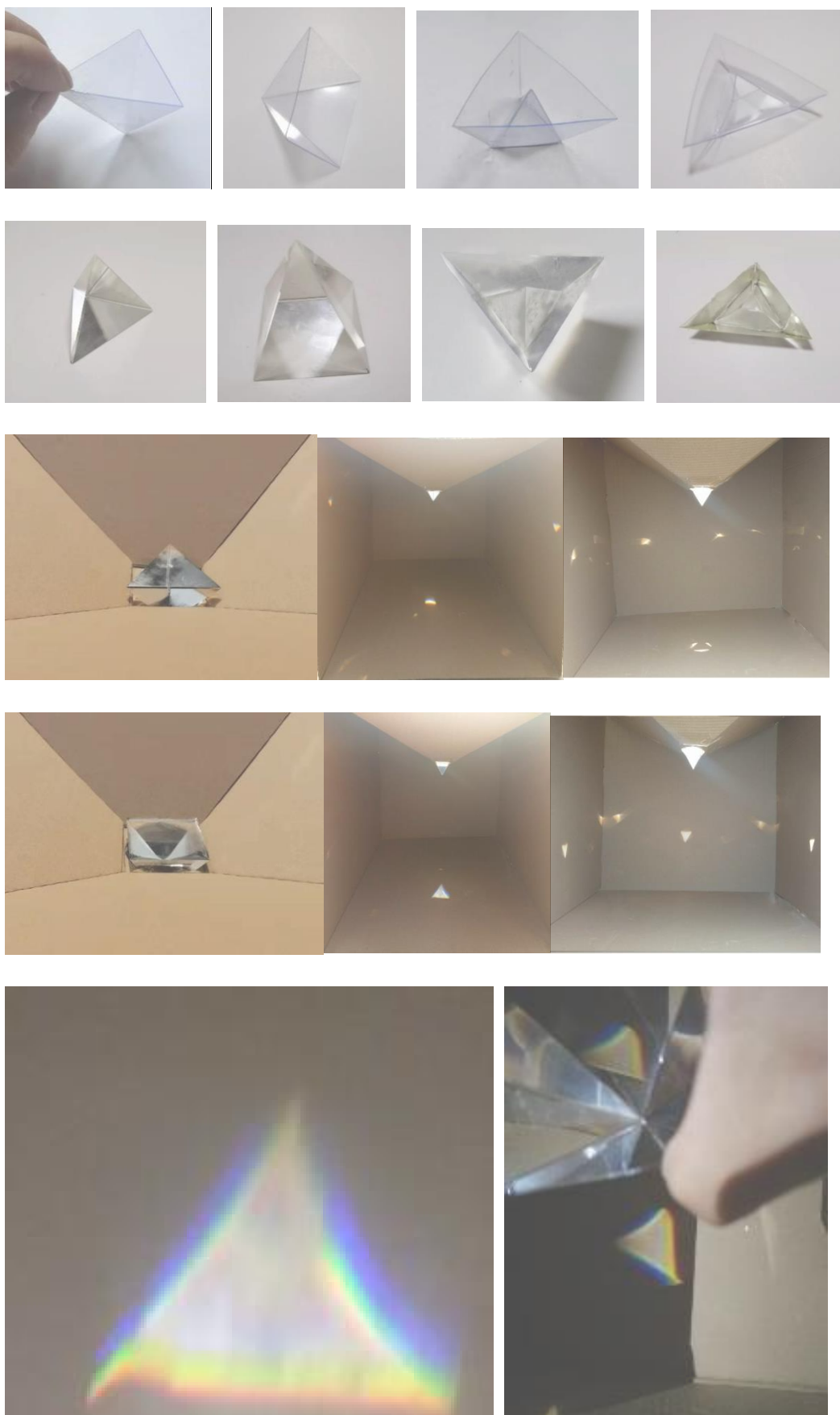


Figure 4.2.7 The shape possibilities and experiment by the author

The heaven unit is the first stone of the site and carries the metaphor of divinity and functional-nothingness. it can be used as a space like chapel or just staring or day dreaming or singing space (the water can give better echoes of the sound) which is a space of magnifier of nature and bridge between heaven and man, the metaphysical and physical. Its simplicity lies in the basic natural element-utilization, that is, water, light and wind.

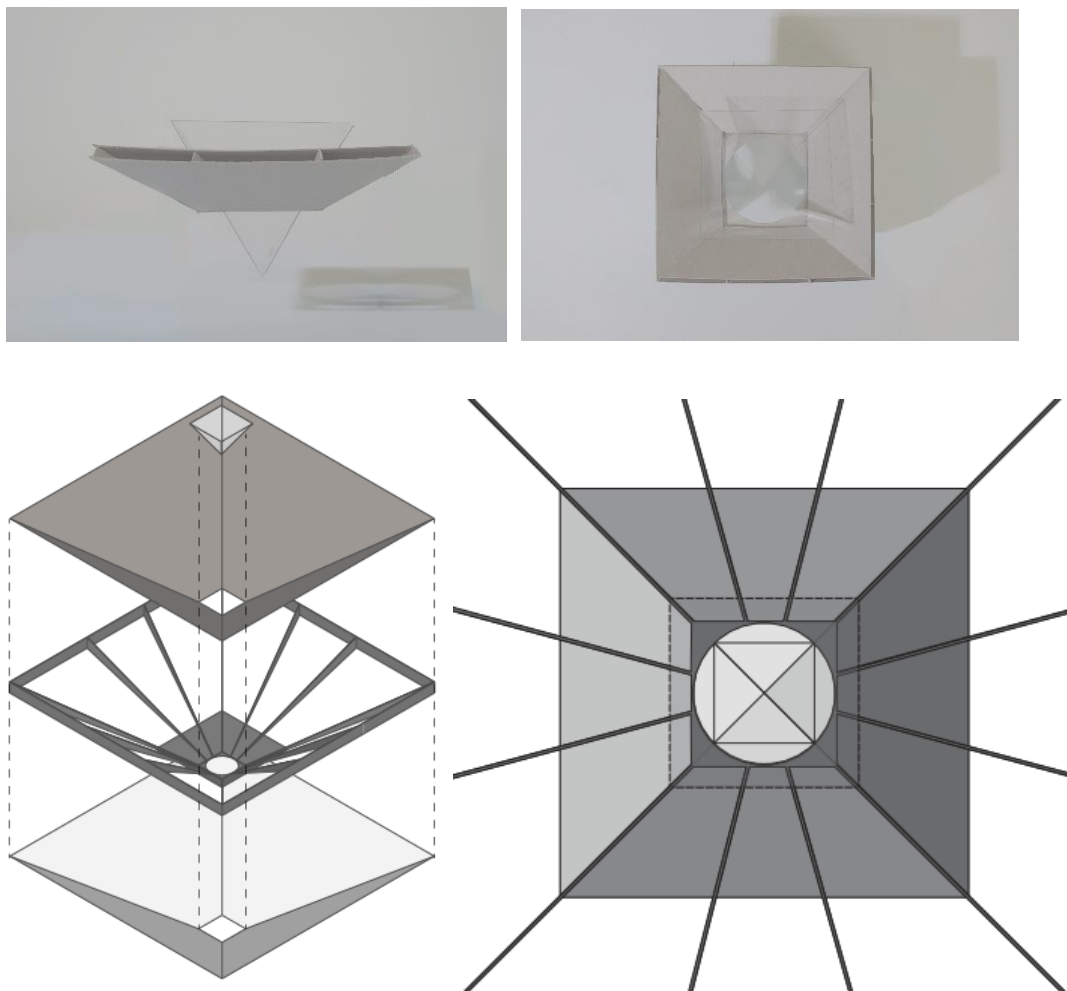


Figure 4.2.8 The axiomatical and top view of the element design by the author

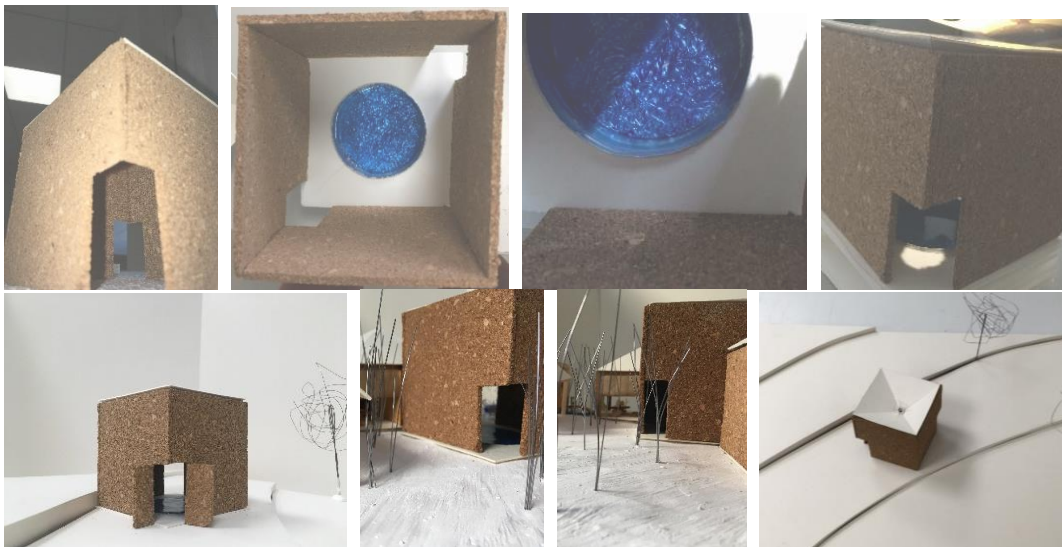
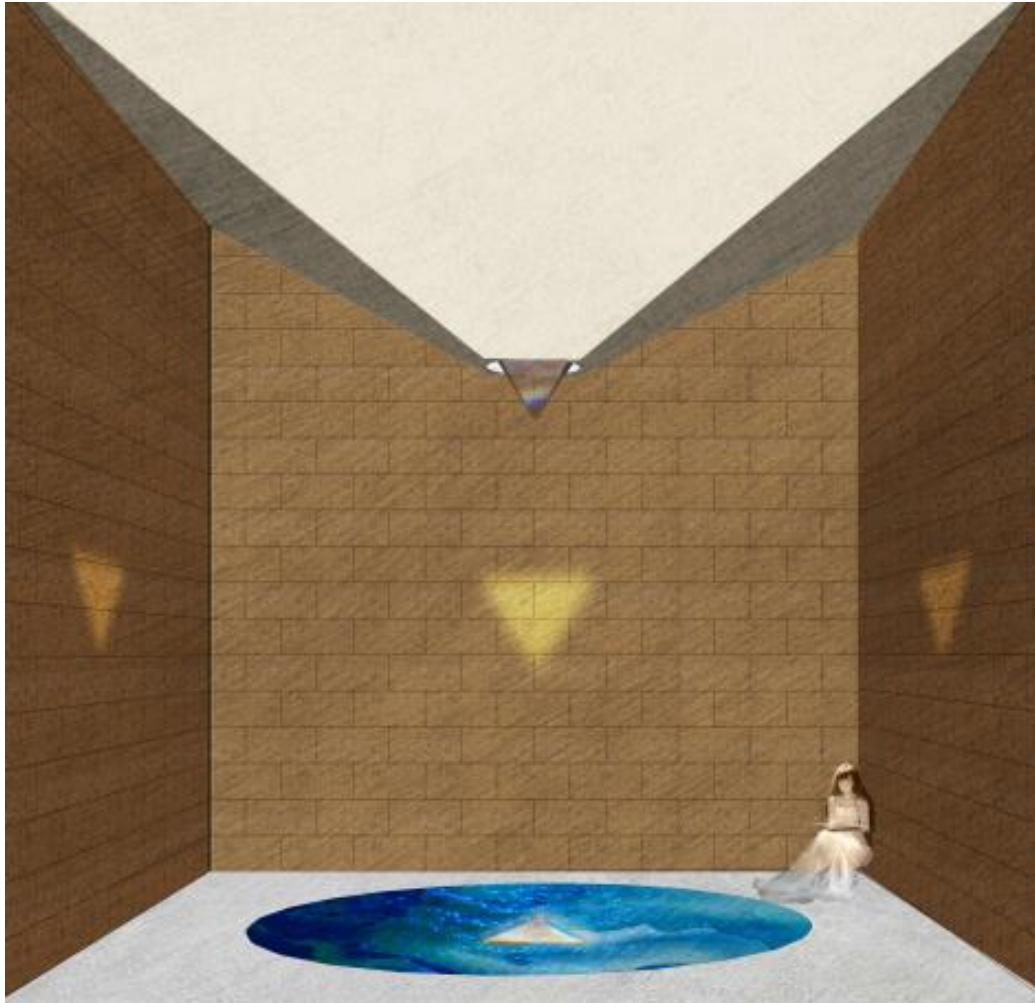
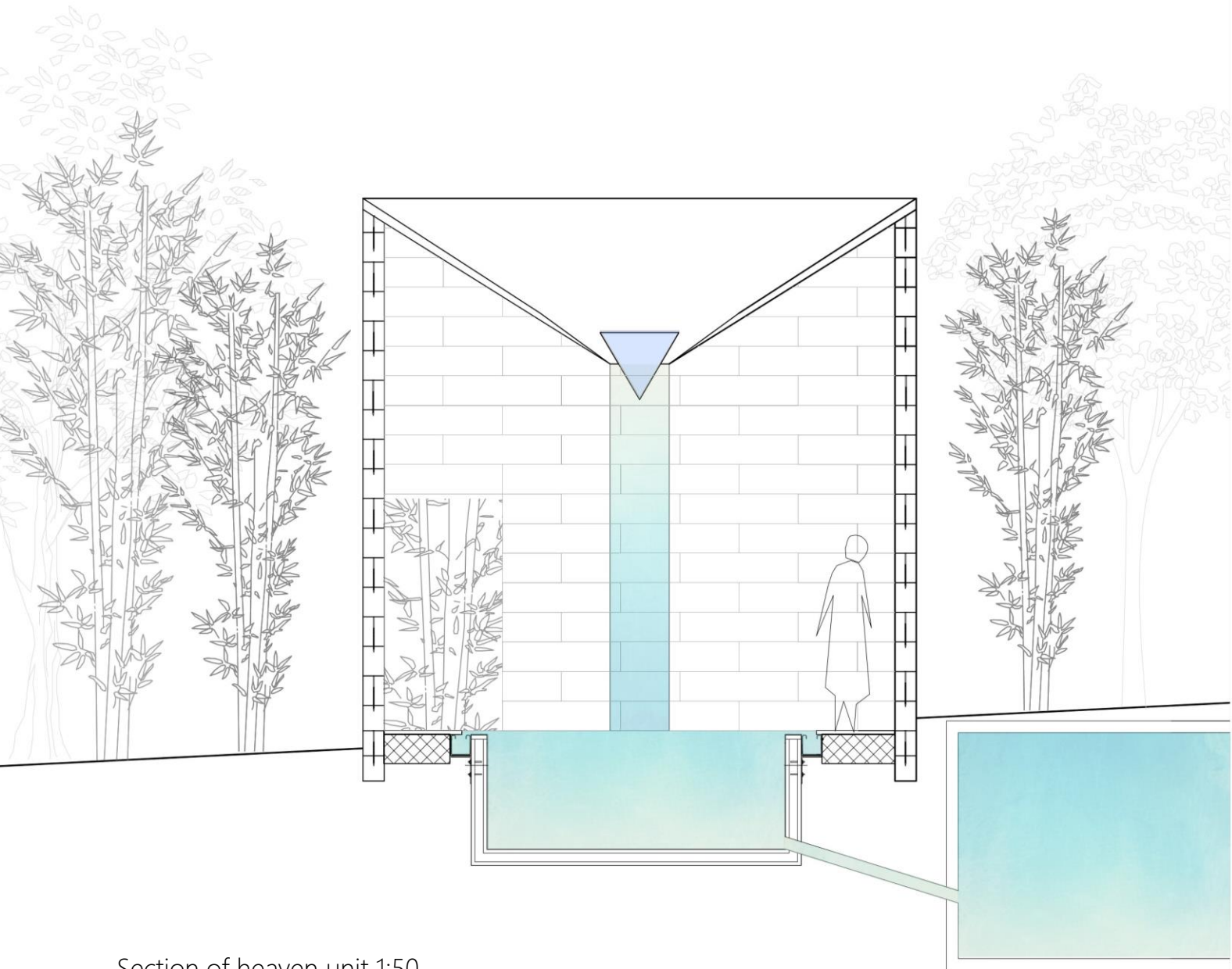


Figure 4.2.9 perspective of the heaven unit and model of the heaven unit by the author



Section of heaven unit 1:50

B The Earth Unit

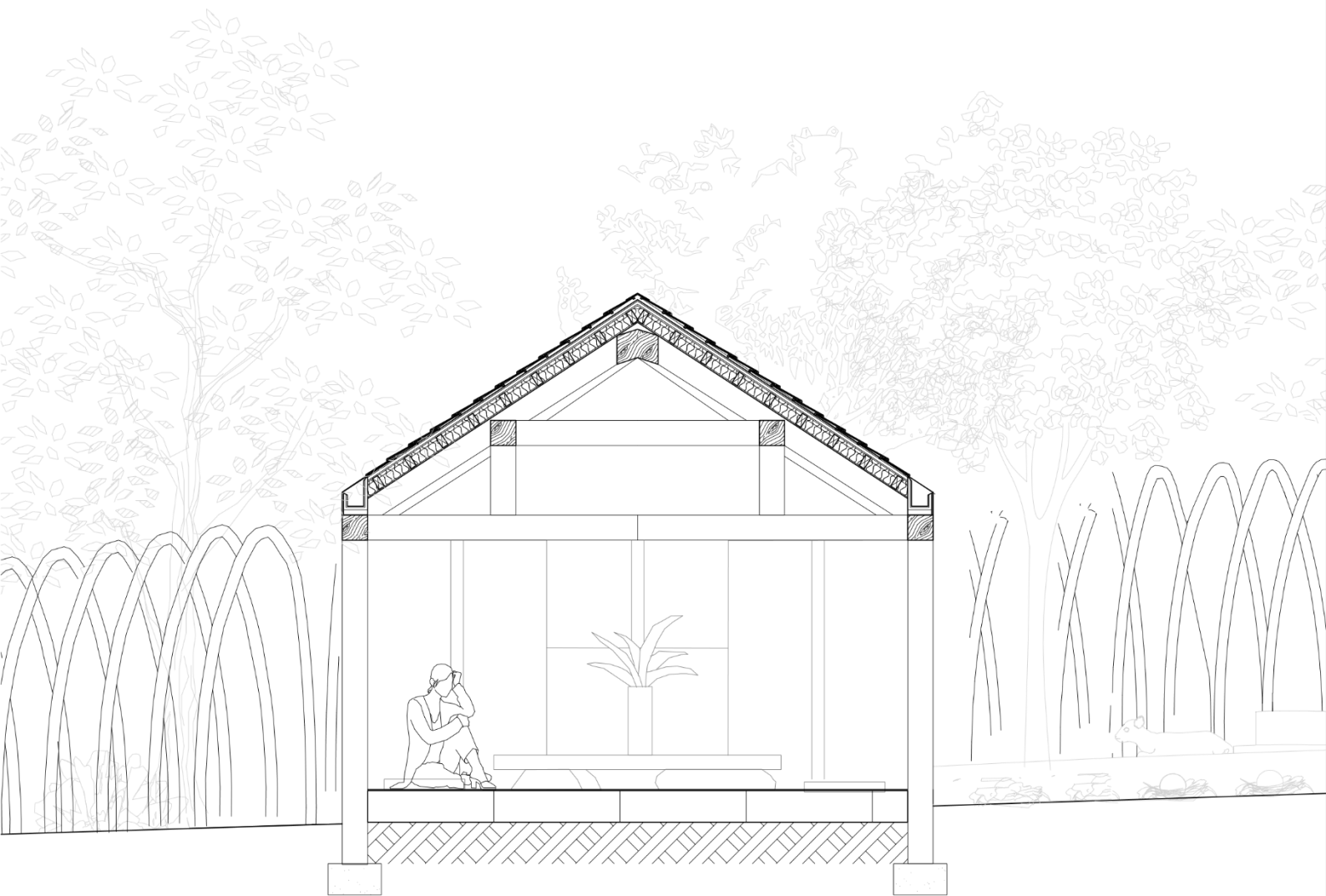
The earth unit locates beside the heaven unit. It is a pavilion constructed by wood. I made this space lower than the other unit for practical reasons. For my own summer house I will make this place where most of the daily activities take place like cooking, doing craftsmanship, feeding animals etc. As it is also near heaven unit when I am



Figure 4.2.10 The Earth unit model by the author

tired I can come there to take a spiritual rest. The floor layout is flexible and I just shows my possibilities and preference of arrange the furniture. And I would like to become a craftsman here to learn about everything to survive like carpentry, textile dying, cosmetic making, growing and cooking etc. to make use of the rich artisan tradition of Mallorca.

Here one can live like a farmer to experience what is the really necessity of life meanwhile a spiritual life by observing the plants and animals to respect and marvel at the ordinary miracles of life itself and thinking about why people need utopia to escape the masking routine life-style and find reconciliation in nature and where the real reconciliation of body and soul comes from. Everything comes from nature and ultimately return to nature. Adam comes from earth and finally return to soil again without carrying anything he has labored on this earth. So this earth unit is like a symbol of earth which is about laboring and hard-working



Section of earth unit 1:50

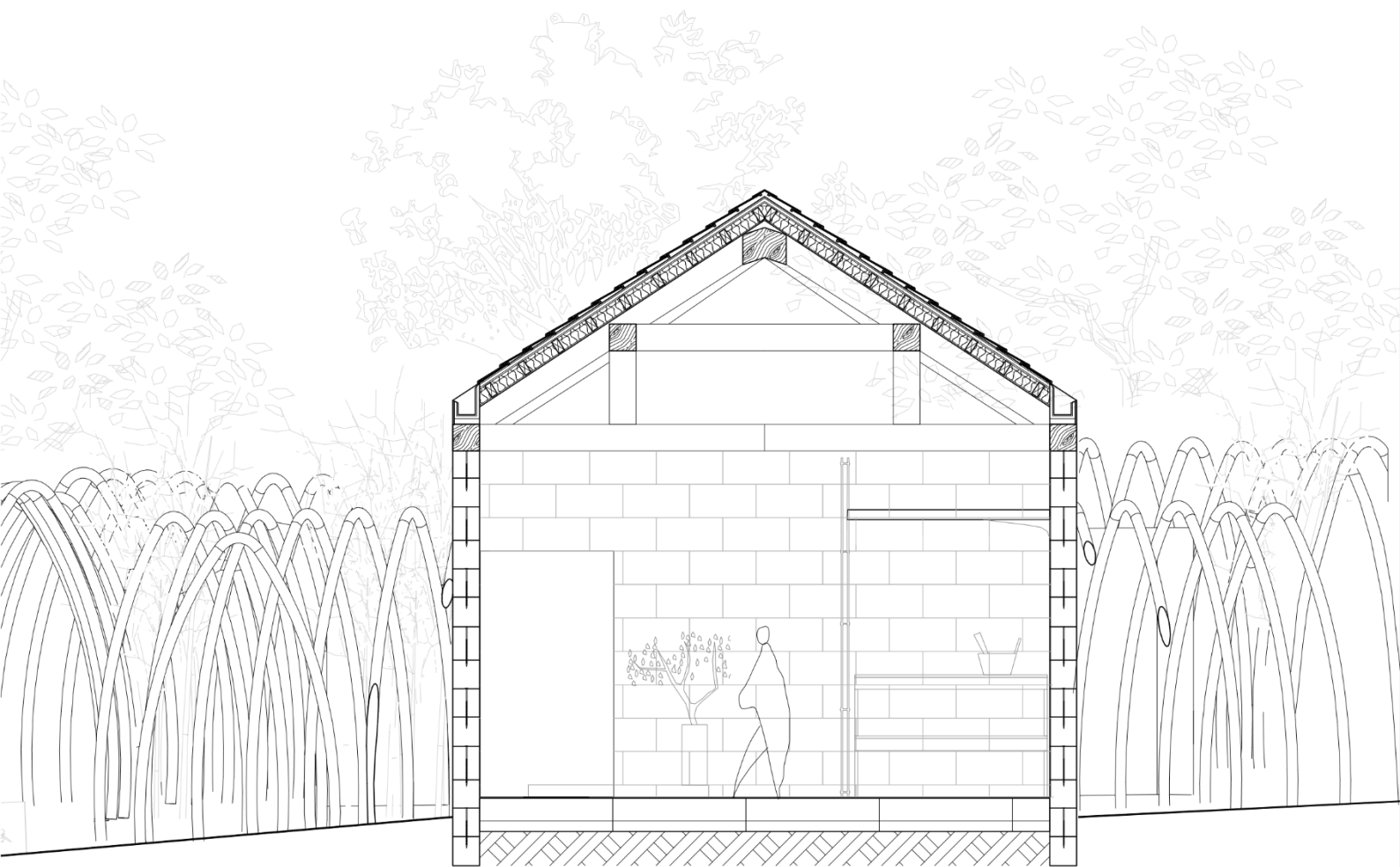
C The Man Unit

The Man unit is not far from earth unit. It is a unit with the total height of 4.5m and the height of roof is 1.5m also according to the 1:3 proportion. This unit is quite a functional one as it satisfies the basic needs of man like sleeping, shower, Sauna and dressing up. And I plan to build all the furniture by myself like the biggest partition wall is made of bamboo. The wardrobe and bath tube is made of recycled wood panels from the old furniture and doors. The bedsheet will be the local Roba de llengües cloth made by myself. The partition wall between the bath room and sauna

is made of cork to make use of the heat generated by sauna for the shower to lessen the energy burden. As the bathroom also has a door. I propose to have a bamboo garden around this unit, so it is possible to bath in front of the bamboo among the nature. As the unit only has two corner doors, the light effects will be more obvious. If it is located in the bamboo garden, the floor will become a canvas for the bamboo shadows. I can observe this natural painting according to the change of time.



Figure 4.2.11 The Man unit model by the author



Section of man unit 1:50

D The Time Unit

The inspiration comes from the "Hou qi (Weather Pneuma)"[16] in the ancient Chinese. I put the twelve pitch pipes made of bamboo in a circle in the closed cubic space. And pipes are fill with dust burned from reed membrane (so-called Jia Fu). When different season comes causing the change of pneuma so this is a space combines the ancient meteorological method, musical theory and time together to

visualize the passing of time. This unit shares the same dimension with the man unit. And the ground is untreated earth to bury the pitch pipes and get connected to the changing pneuma of the ground as an indicator of time.

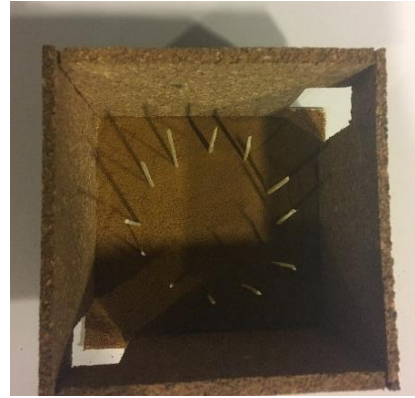
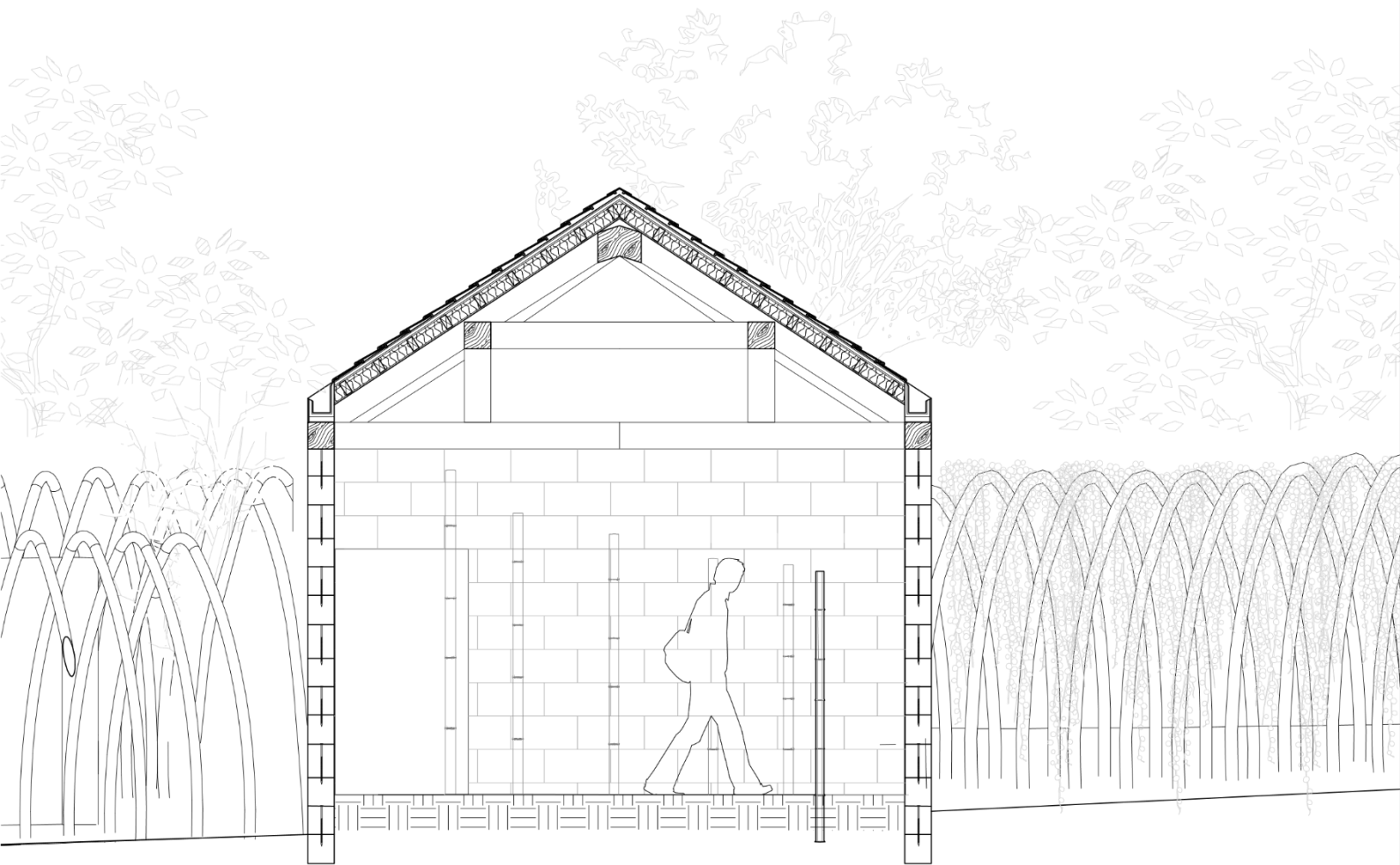


Figure 4.2.12 The time unit model by the author



Section of time unit 1:50

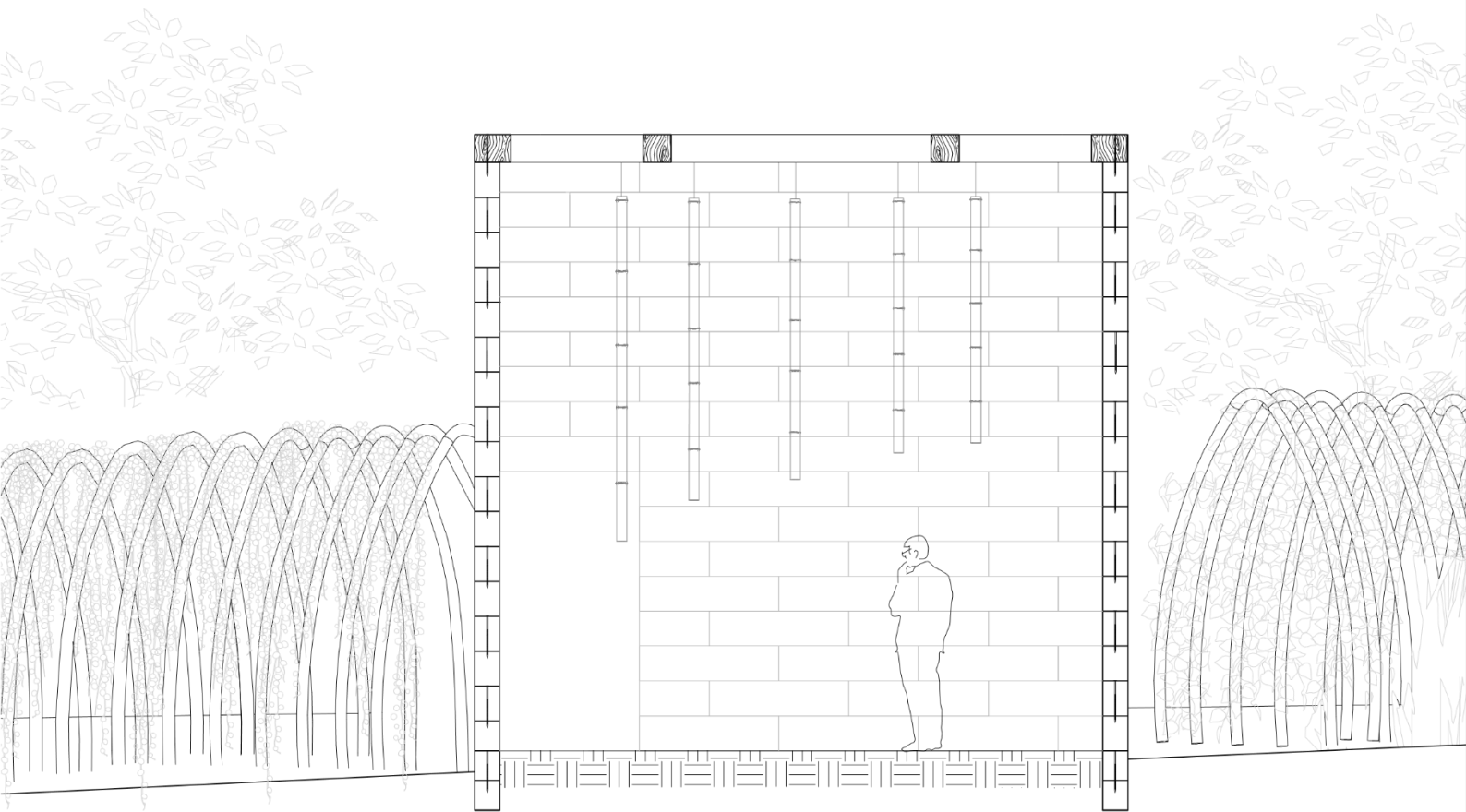
E The Tone Unit

The inspiration comes from the ancient instrumental -aeolian bamboo organ. I hanged the twelve pitch pipes from the beam so as to attract the wind into the tunnel of the pipes to stimulate the sound to make the movement of wind audible. As the length of the pipes varies so the direction and strength of the wind will compose different melodies and this is also a unit musicians can get inspirations from. This is the space of wind also which is telling the power and existence of the invisible beings like spirit and music. When the weather and season changes the wind comes from different direction will give a mysterious symphony. It is a unit without roof in order to gather the wind and observe the sky. The beam will also cast beautiful shadows upon the wall so here you can hear the symphony of shadow and wind.

This unit shares the same dimension with the heaven unit as God is a spirit (wind) which is a cube but with only beams generated by Ad Quadratum.



Figure 4.2.13 The tone unit model by the author



Section of tone unit 1:50

F The Melody Unit

Guqin is called "the father of Chinese music" or "the instrument of the sages". The Chinese ancestor Fu Xi saw the phoenix coming and got the inspiration to make the first guqin. The length is 3 chi 6 cun 5 fen³⁰ which symbolize the 365 days of one year. The forehead is 8 cun according to 8 solar terms; The nut is 4 cun in width, representing 4 seasons; 2 cun thick, as a symbol of Yin and Yang. It has 12 Hui, which

³⁰ 1 chi=10cun, 1 cun=10 fen, 1fen=0.231m in ancient Chinese



Figure 4.2.14 The melody unit model by the author

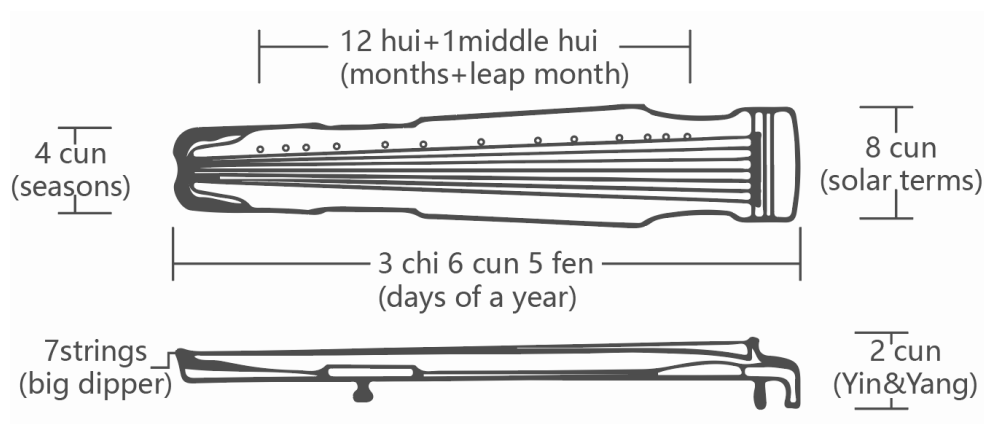
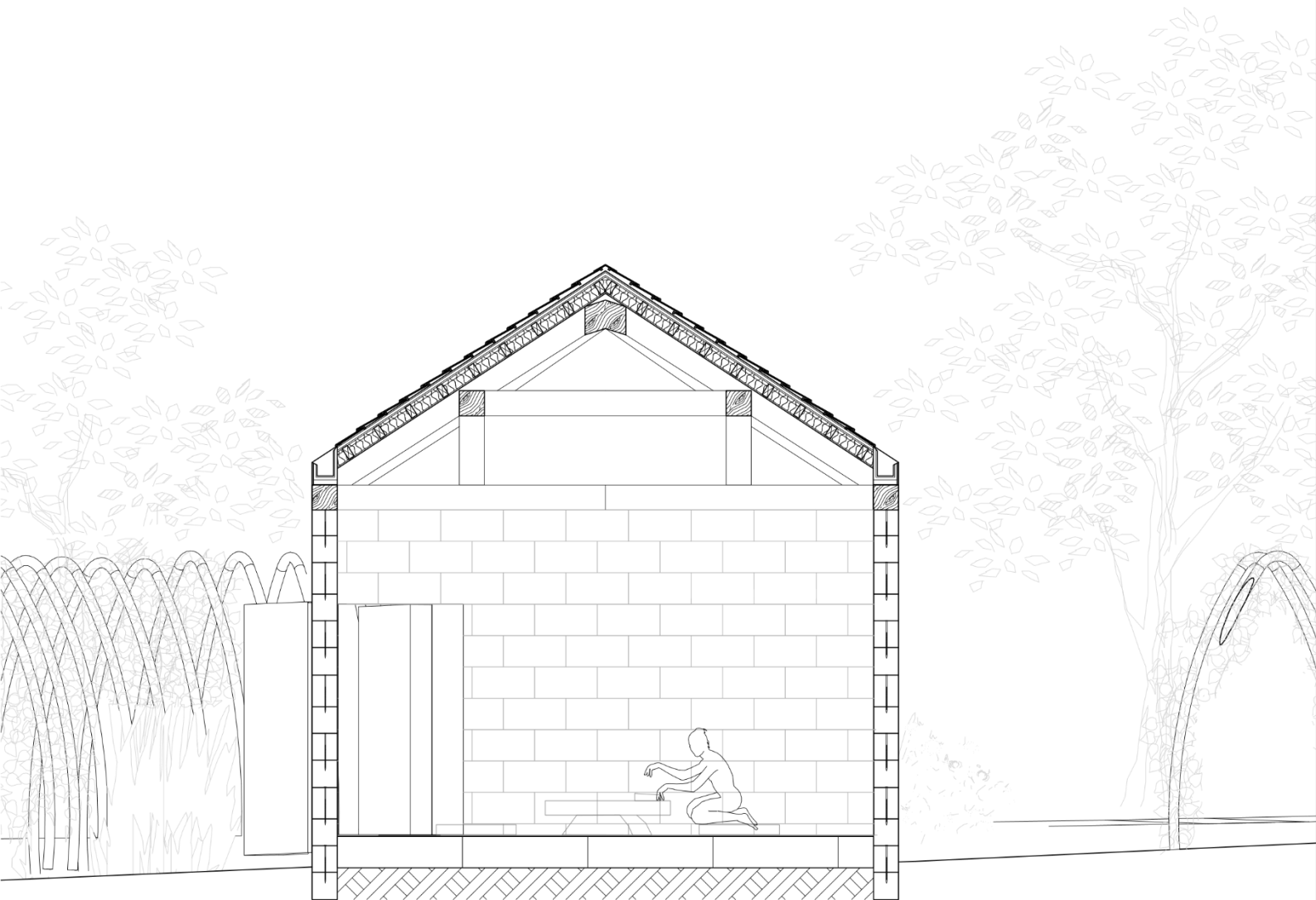


Figure 4.2.15 Chinese Guqin symbolization (Resource: by the author)

is a metaphor of 12 months; There is another middle Hui which symbolizes the leap month in lunar calendar. There were seven strings on the top, according to the seven stars of big dipper³¹. Since Fu xi makes Guqin according to the numbers of universe completely, the life that Guqin embodies, enables it to be a tool to communicate with heaven which gives it a supernatural meaning. The ancient people thought that the music played by Guqin was the music of the heavenly jade pool, so they also called the Guqin "yao qin".[19]

³¹ *Fengsu Tongyi* written about 195 AD by Ying Shao, mentions, the seven strings in Guqin carries the symbol of seven stars in big dipper.

This unit has the same dimension with the time unit too and it is a multi-functional space too. I propose it could be a place for meditation and studio and living room. Music is the orderly arrangement of tones. So man can play Guqin here and seek the harmony between man, earth and heaven as a symbol of melody. As Pythagoras also think the universe is a heavenly harmony music.



Section of meldoy unit 1:50

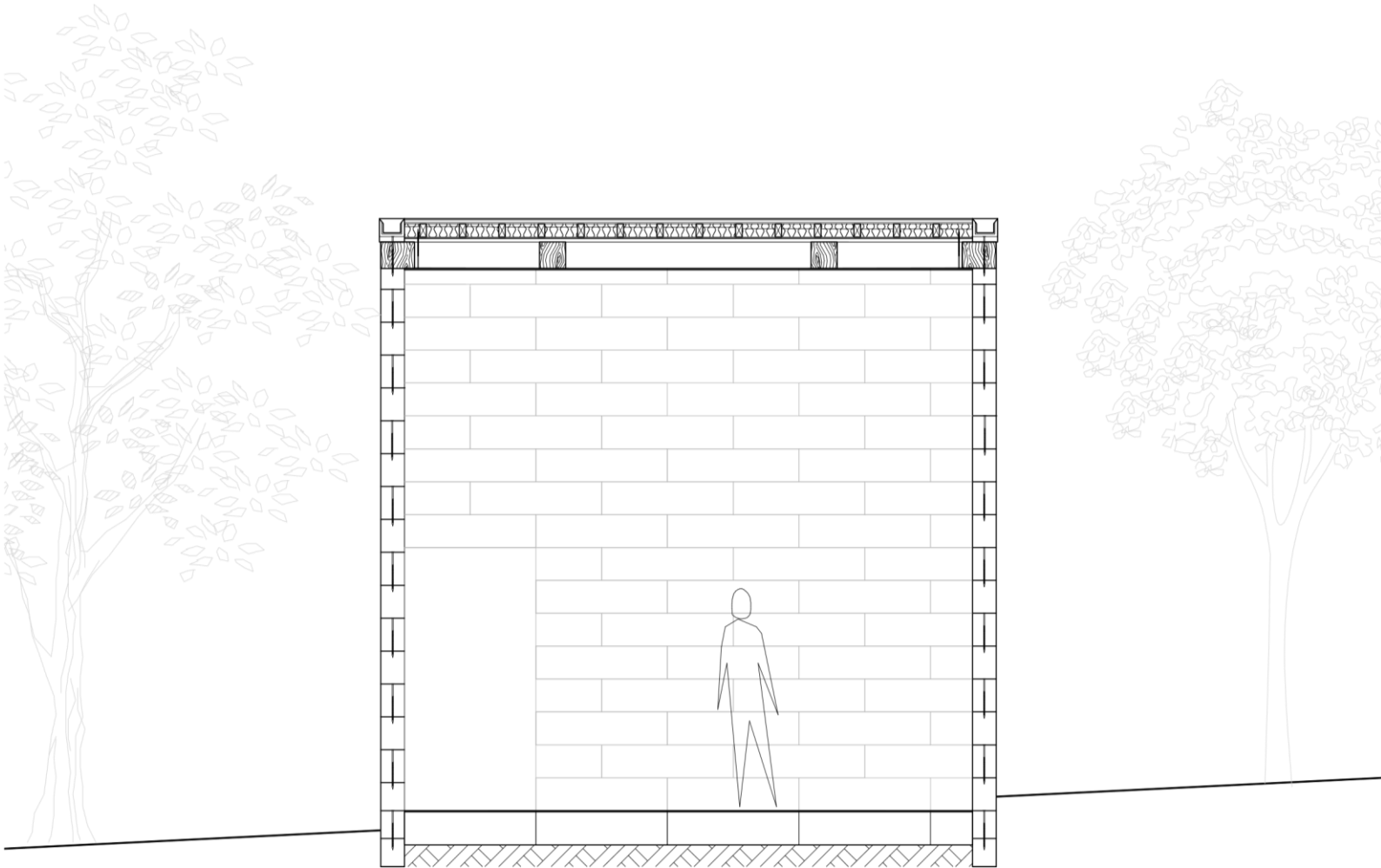
G The Star Unit

The star unit is the only unit separated by the stream from the other six units. Man can reach it by passing a little bridge. The roof is flat. As I use mirrors here on both

the ceiling and floor to create the illusion of endless pit which is a symbol of lust and death and also in a sense visualize the invisible abstract concept. The star here means the fallen star. "How art thou fallen from heaven, O Lucifer, son of the morning! how art thou cut down to the ground, which didst weaken the nations! For thou hast said in thine heart, I will ascend into heaven, I will exalt my throne above the stars of God: I will sit also upon the mount of the congregation, in the sides of the north: I will ascend above the heights of the clouds; I will be like the most High. Yet thou shalt be brought down to hell, to the sides of the pit. " (Isaiah 14:12-15 KJV). The dimension is also same with the heaven unit as the fallen star tries to imitate the word (God) but inside is only illusion and confusion. The star unit is also a symbol of chaos which distinguish it from the other six units connected with nature and order. This space is usually closed and has a dim atmosphere for introspection to visualize lust so as to break away from the unfulfilled lust which brings unsettlement, anxiety and fears which I deem is very important for spiritual restoration as a summer house.



Figure 4.2.16 The Star unit model by the author



Section of star unit 1:50

4.2.3 Structure

These units are mainly built with Cork block, wood and metal. The solid wall is built with cork block and the pavilion is built with wood. The cork is joined by long screws and the wood is connected by mortise and tenon. There are two types of roof structure: one is wooden, one is light steel. The corner door is made of wooden skeleton and veneered with cork to achieve consistency with the facade. As a result, the whole architecture is made of untreated materials which echoes to the colorless concept. The insulation material of roof is Posidonia which is quite common materials It can be found in the beach areas of Mallorca.

Cork construction

Cork is an air-tight and light material which can be used as thermal and acoustic insulation. It is endemic in Spain. It carries the natural color of wood and good architectural quality. The Studio Bark has constructed a house made of pure cork brick and they had tested the water-proof degradation and fire-resistance. And it proves good performance as a result. I adopt their research result to my design. As they compress the 1000 mm x 500 mm x 300 mm cork to a denser version block with the dimensions: 1000 mm x 500 mm x 180 mm. For the efficiency reason it is cut into the final dimension: 1000 mm x 250 mm x 180 mm. And all the solid wall in my unit is made of cork brick. And they have tested and proved that the block can also be used as floors and so I used rammed earth as foundation and then I lay the floors. And the blocks of the wall are connected by Spax 300mm Wirox screws.[30]





Figure 4.2.17 Cork brick experiment by Studio Bark (Resource: <https://studiobark.co.uk/buildings-can-be-made-of-solid-cork-we-built-this-to-prove-it/>)

Steel construction

The heaven unit has a reversed pyramid hipped roof. As it will carry the prism, I want to have a lighter roof structure. Therefore, I choose aluminum for the roof structure. For the light effect, the surface around the prism must be sharp and thin so I also choose aluminum as roof sheet to achieve the clean light effect. The corner door frame is made of steel.

wood construction

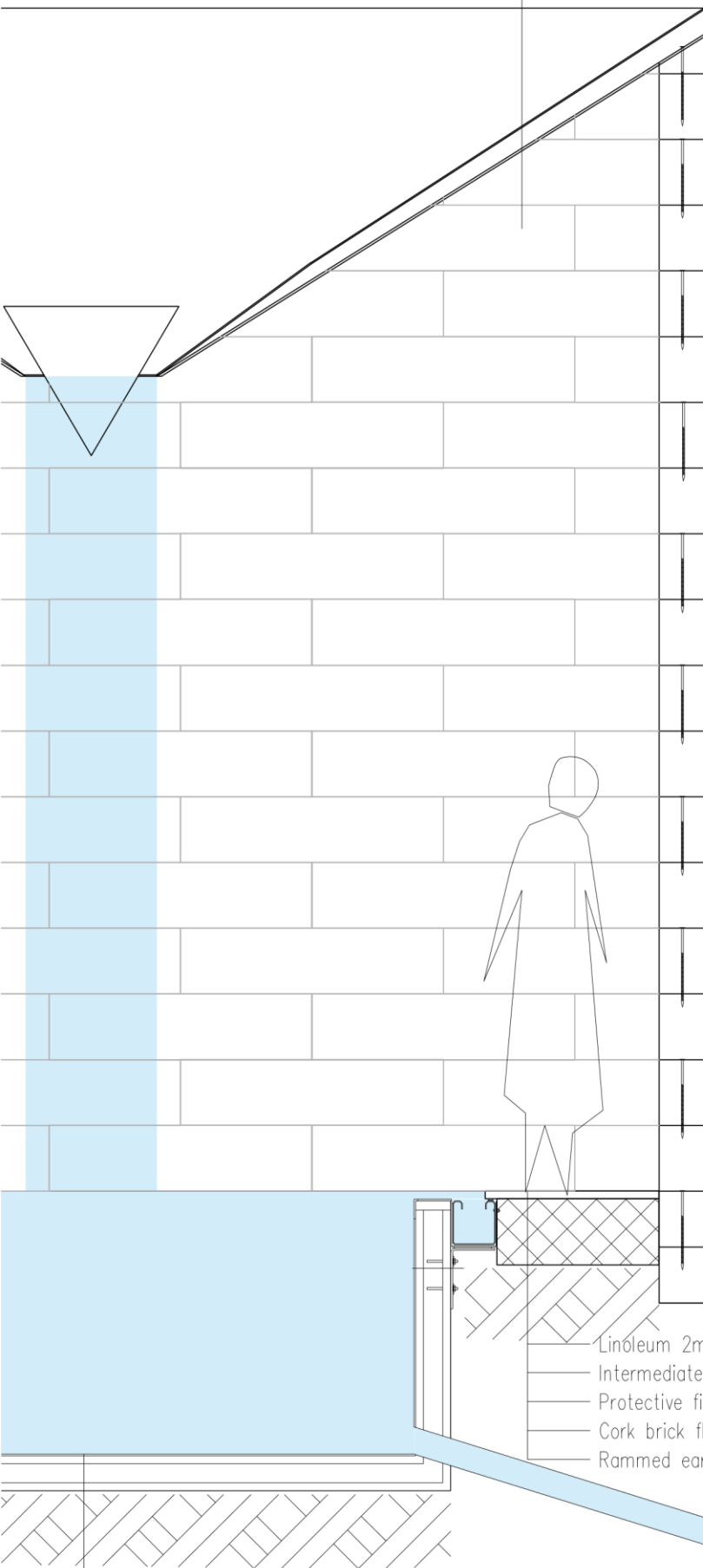
The earth unit is a wooden pavilio. And all the pyramid hipped roof structure is generated by Ad Quadratum as roof is a symbol of heaven and this geometrical method is also a symbol of pilgrimage toward divinity. And all the wooden joint is connected by mortise and tenon. There are three kinds of wooden roof one is flat with insulation in star unit, one is the bare wooden beam in tone unit, one is the pyramid hipped roof with Posidonia insulation which most of the units have except for the heaven unit.



Figure 4.2.18 The structure model by the author

Aluminum roof sheet 5mm
Radiational aluminum beam
white painted OSB ceiling 9mm

111



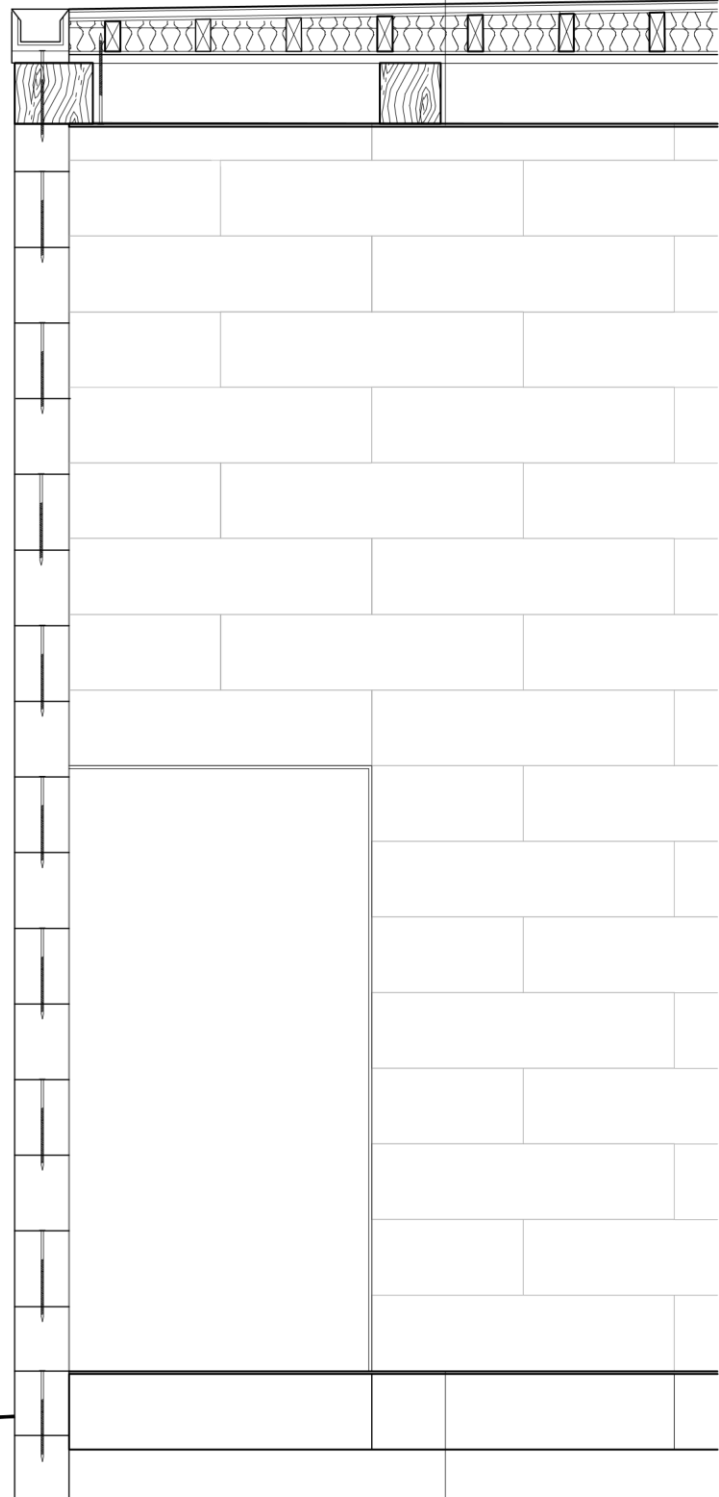
Aluminum covering 7mm
Intermediate layer 30mm
Marès circular pond 70mm
Intermediate layer 30mm
Rammed earth

Linoleum 2mm
Intermediate layer 8mm
Protective film
Cork brick floor
Rammed earth

Detail of heaven unit 1:25

Aluminum roof sheet 5mm
 Lime refined with fibers (NHL or CL) armed with fibers e = 2cm
 Waterproof breathable polyethylene type riwega USB laminate
 OSB type III board
 Wooden rack 5 * 10cm filled with Dry Posidonia Oceanica seal bulk d = 185kg / m (compacted in situ)
 Waterproof breathable polyethylene type riwega USB laminate
 OSB type III board
 Wooden beams 20*20cm
 OSB type III board
 Adhesive mirror sheet

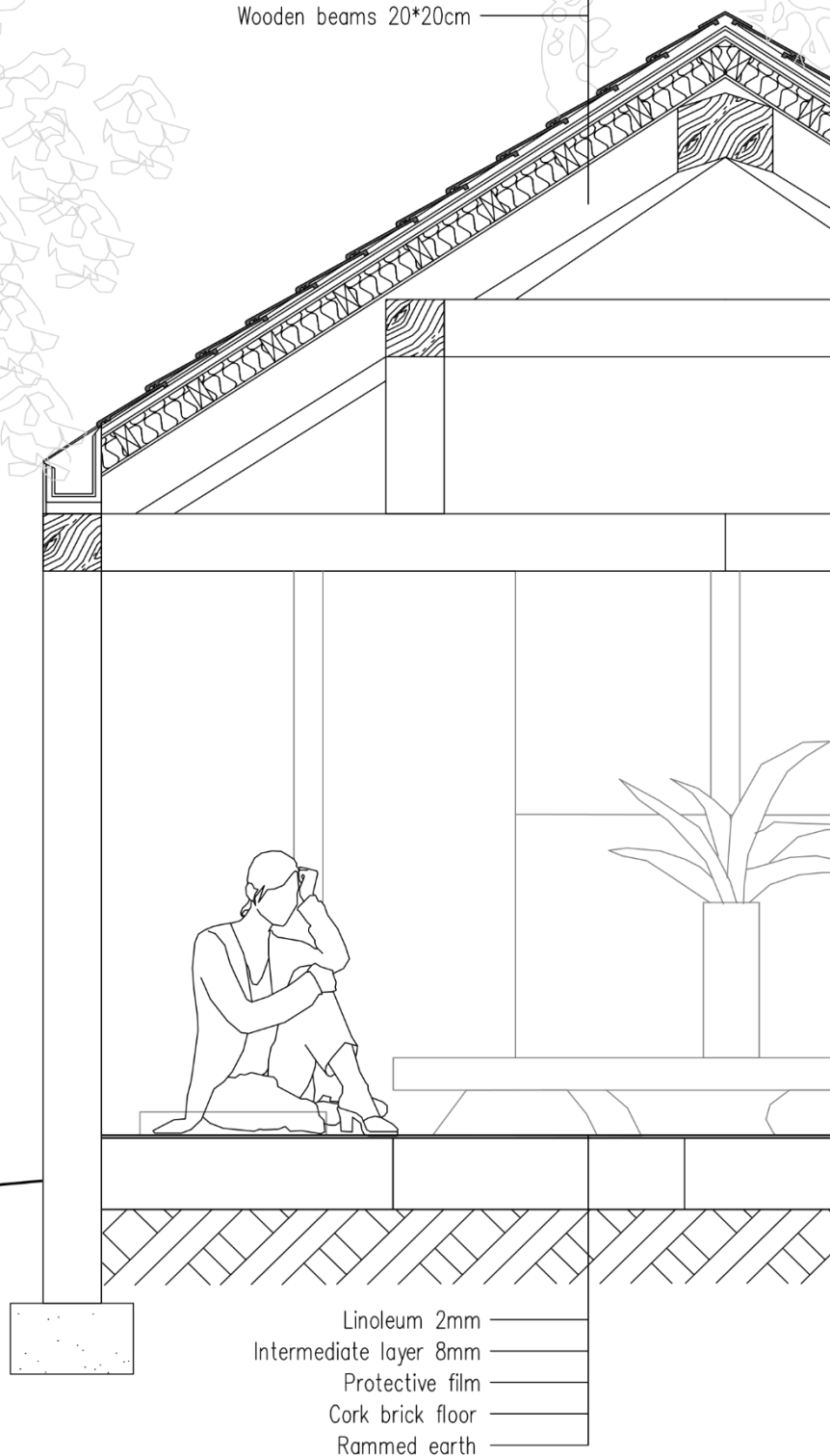
112



Adhesive mirror sheet
 Linoleum 2mm
 Intermediate layer 8mm
 Protective film
 Cork brick floor
 Rammed earth

Detail of star unit 1:25

Ceramic tile (cooked in oven fed with renewable energies)
 Lime refined with fibers (NHL or CL) armed with fibers $e = 2\text{cm}$
 Waterproof breathable polyethylene type riwega USB laminate
 OSB type III board
 Wooden rack $5 * 10\text{cm}$ filled with Dry Posidonia Oceanica seal bulk $d = 185\text{kg} / \text{m}$ (compacted in situ)
 Waterproof breathable polyethylene type riwega USB laminate
 OSB type III board
 Wooden beams $20*20\text{cm}$



Detail of earth unit 1:25

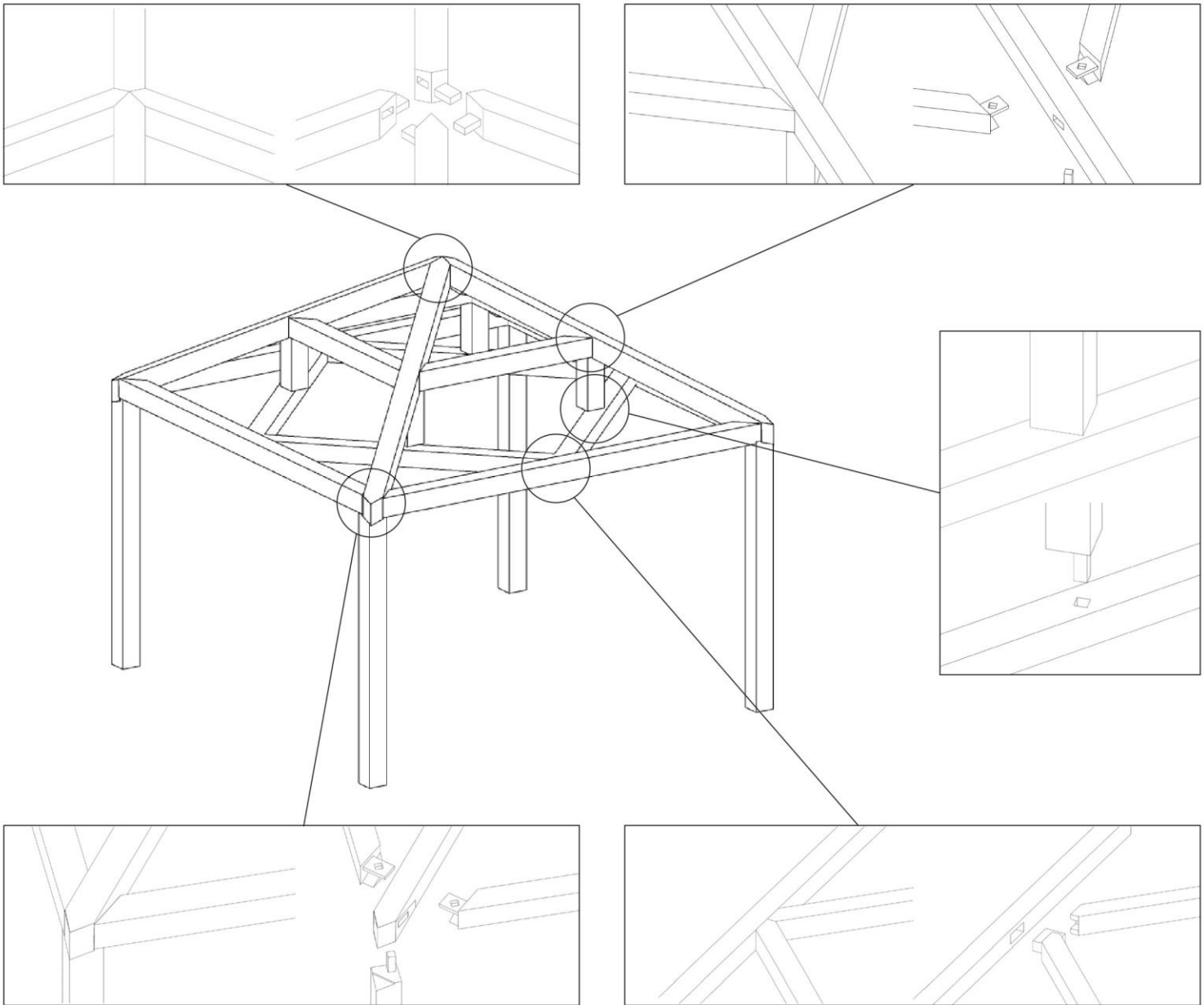


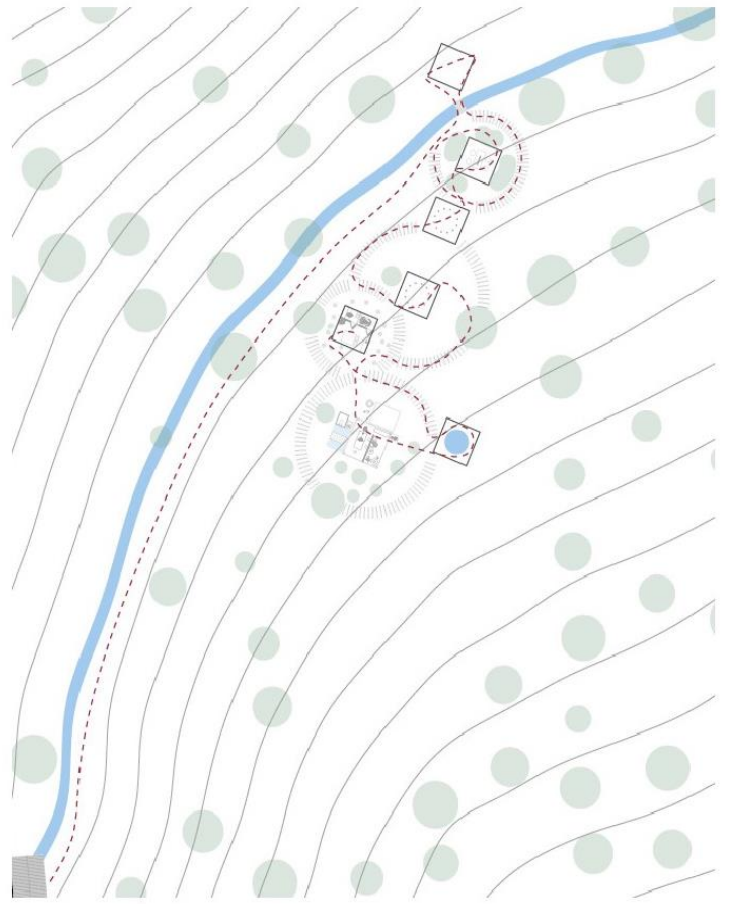
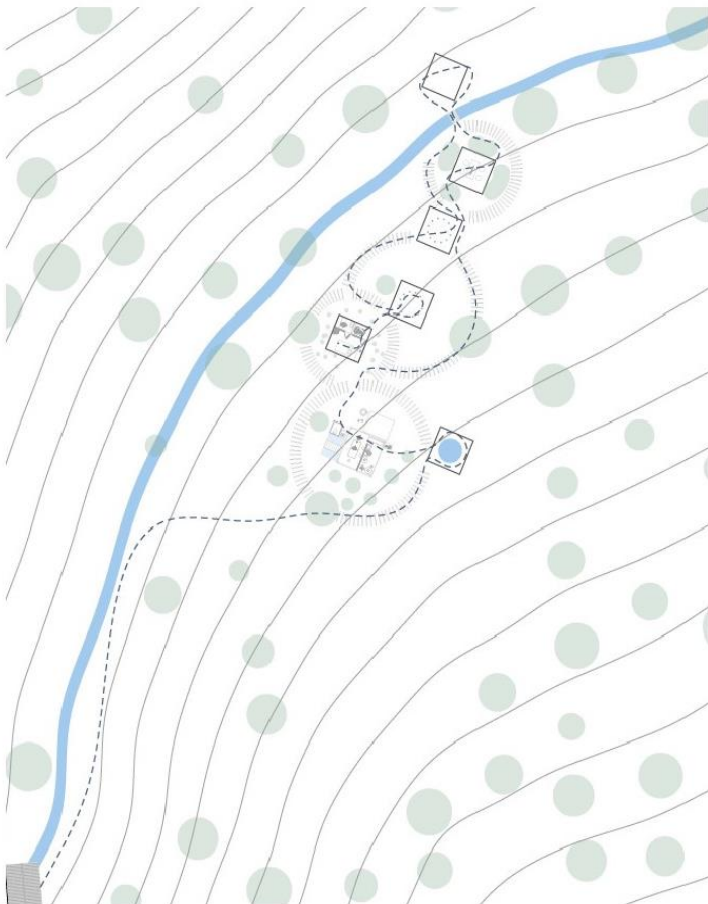
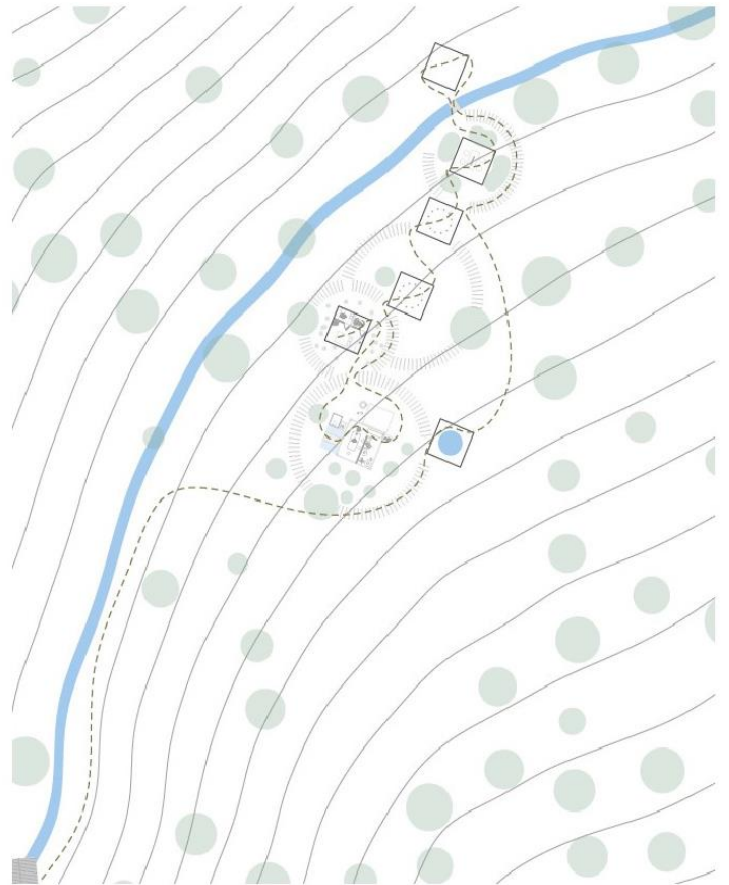
Figure 4.2.19 Wooden joint of earth unit by the author

4.2.4 Sequence

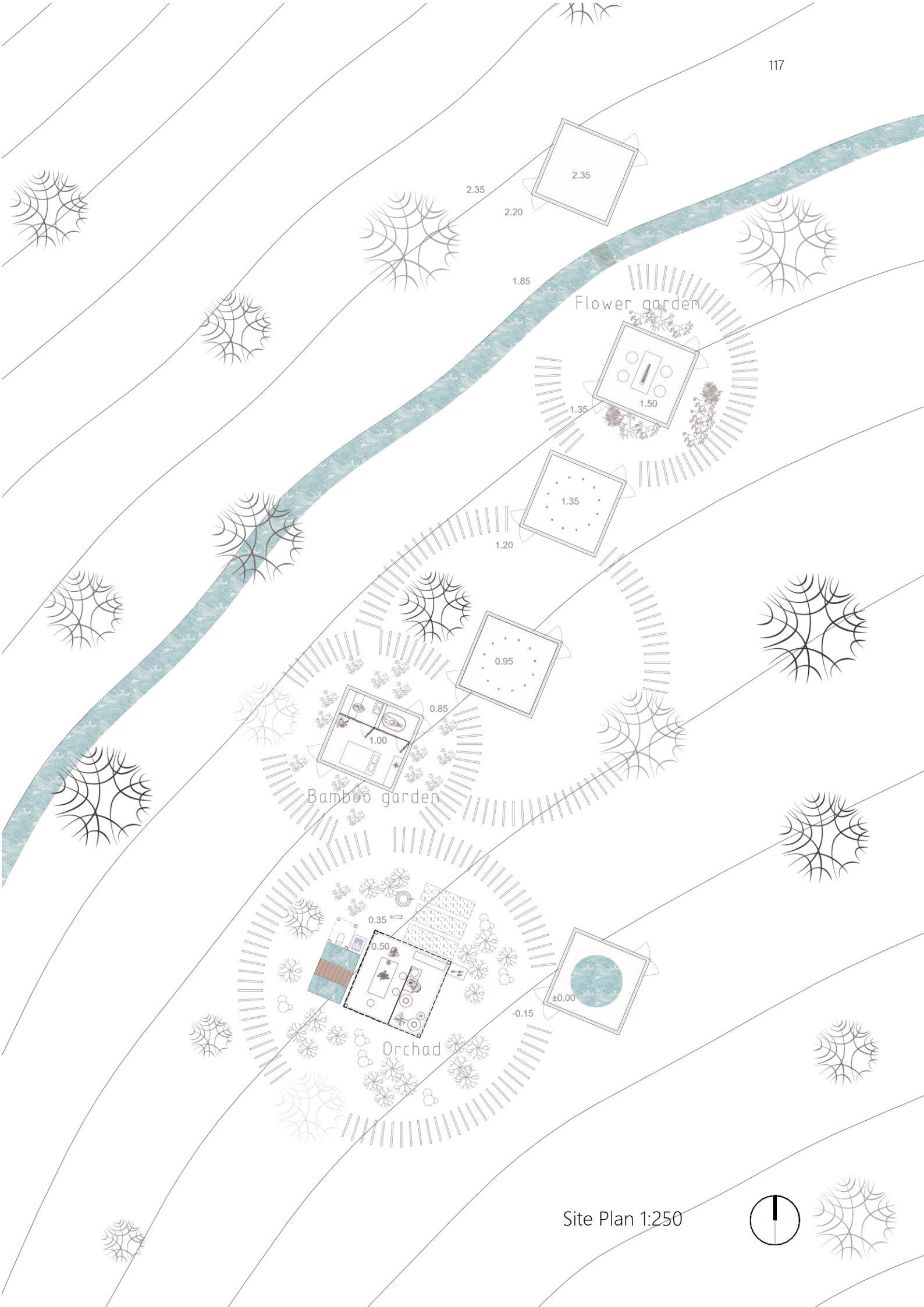
The final layout around the seven units is flexible and I just show one possibility. And I would like to have a "back to field." Style of life to break away from the daily routine. But people can design their own sequences by creating different layout of gardens around the seven units.

I will use bamboo's elasticity to build corridors around the seven units to form different scales of courtyard. The foundation of bamboo is its own root and then I just plants them and bend them. In short, I just make use of its own nature to form this green structure. It is also possible that one can cover the corridor with some textile to bring some kind of fairy atmosphere. But I just like the rhythmical shadow created by this bamboo corridor. And I use four circular corridors to connect the 6 units. The star unit is connected with the others by the bridge.

I have drawn inspirations from the traditional Chinese garden to create a series of courtyard with different themes around these units. And this kind of spatial sequence is not fixed. And I only give four of many possibilities of walking through these courtyards as shown in the next page. I want to apply the ancient Chinese music essence here, so these courtyards are like the musical notation but according to the person 's different choice of route(improvisation), the experience (like the music) will be different. There is an orchard around the earth unit, which is like a miniature of farmland. One can sow, plants and harvest here to observe the traces of life. I can also do craftsmanship here and feed the animals etc. The next courtyard is around the man unit which is bamboo garden which creates the atmosphere of poetic tranquility. The largest courtyard is around the time unit and I will plant ivy upon the corridor so it becomes a green tunnel and the space within the courtyard is flexible in function which can be used for many kinds of outdoor activities. The last courtyard is the flower garden around the melody unit. The corridor is covered with purple vine. Inside the courtyard, it is blossomed with all kinds of flowers. I can do experiment here to develop new kinds of natural cosmetics and make fresh flower tea for the guest here and play Guqin to perceive the harmony in life.



Four possibilities of walking through the seven units

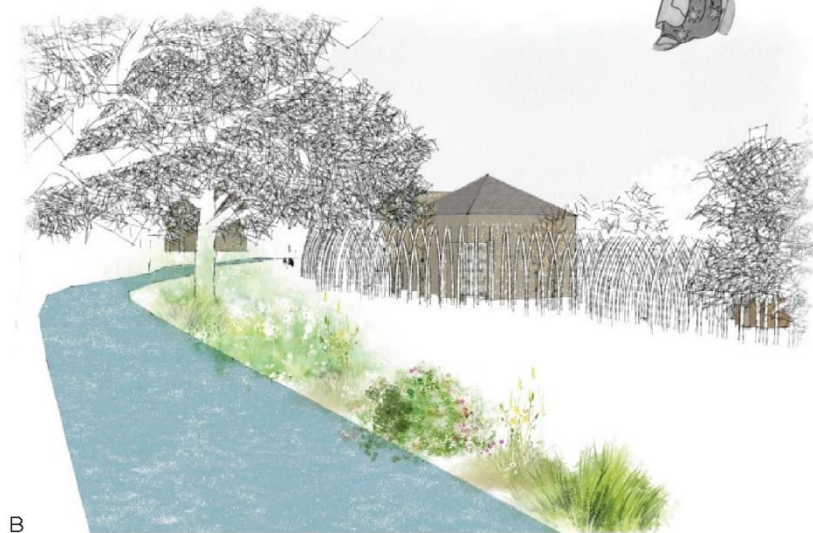
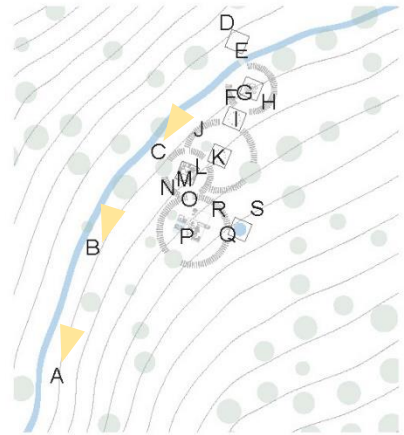


Site Plan 1:250



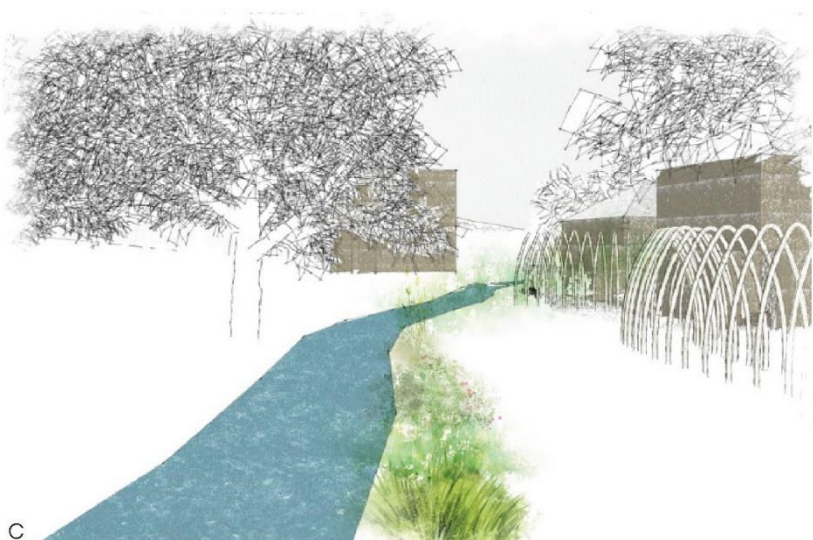


A



B

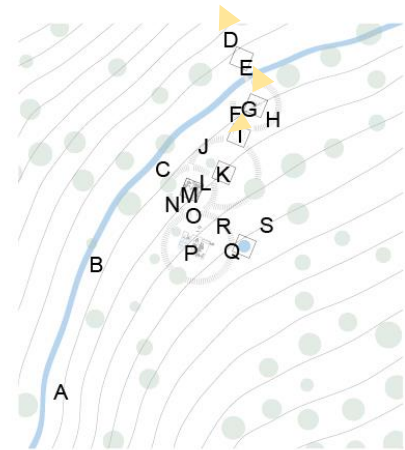
In the river side, I will
plant vegetations



C

Sometimes doing
fishing with friends is
also a good idea

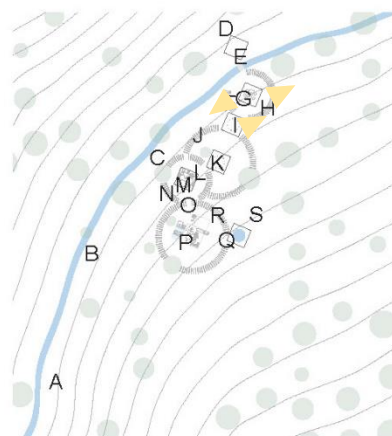




I will learn from the local
craftsmanship and get new
skills from the artisan



G



H



Playing Guqin to
cultivate my good virtue



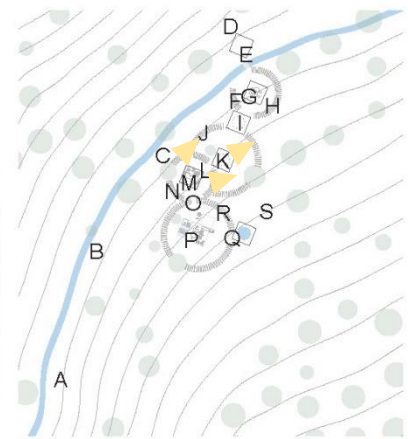
I



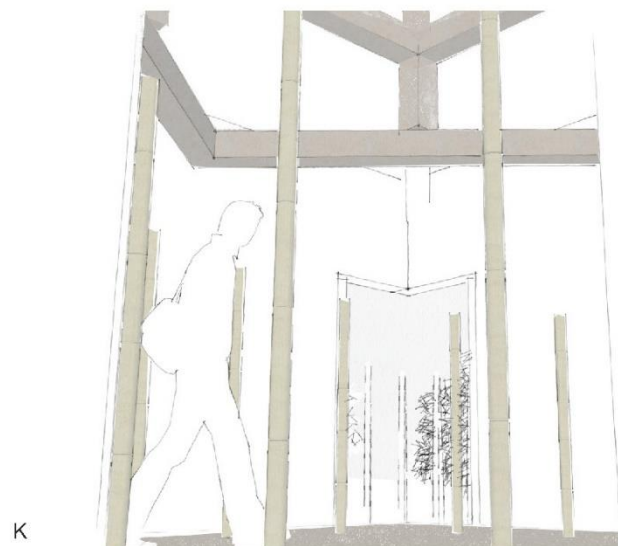
Got inspirations from the tone unit
and compose a song for the wind



J



Through the ivy corridor, I
can reach the time unit to
observe the solar term



K



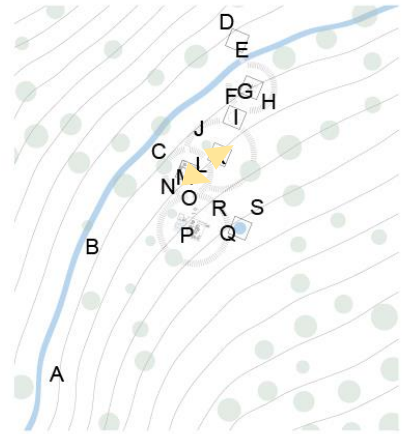
L1

Take a bath in the man unit and
get refreshing and test the
cosmetics I made out of the flower



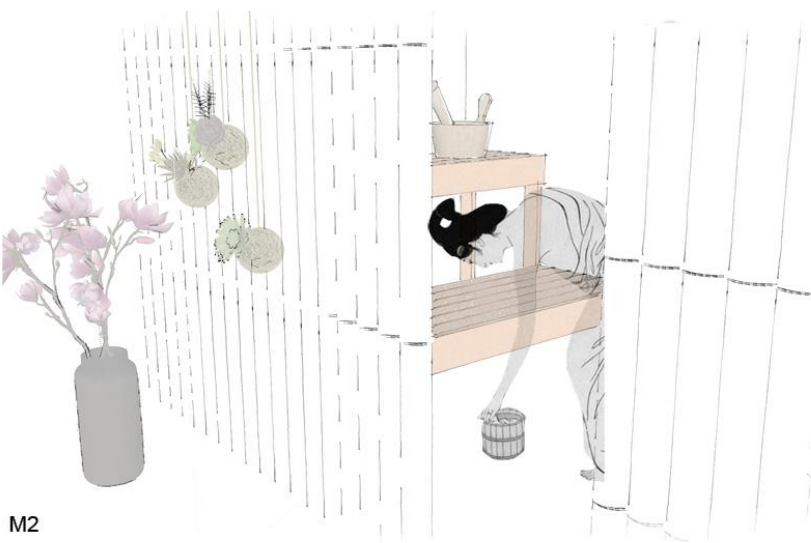


L2



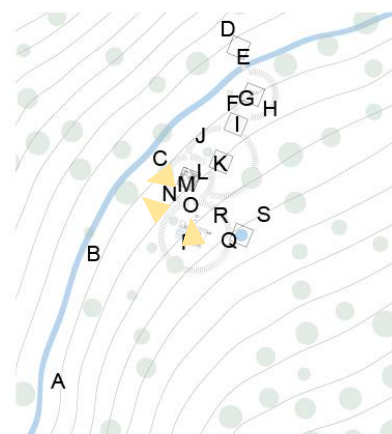
M1

Take a nap in the man unit and observe the shadow of the bamboo garden around it



M2

Sauna is always a good way to enjoy summer time and get refreshed

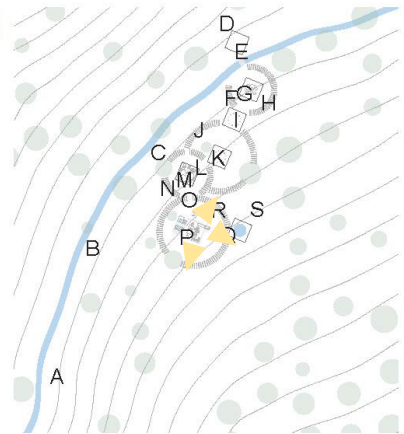


Growing food in the orchard and make special cuisines for my guest



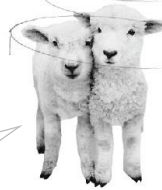
Try every kind of new things and make my food fresh and healthy





P1

It's time to feed us! we are so hungry.



P2

I like picking fruit in the orchard and make jams out of them



P3

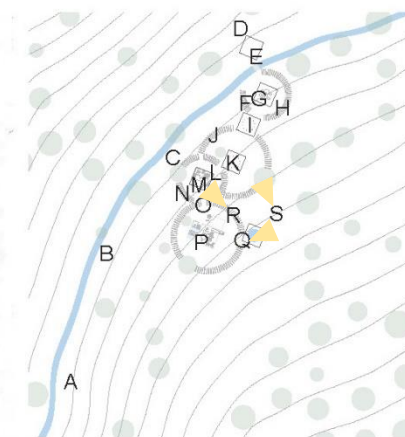


Raise some silk worms and learn how to make silk and cloth

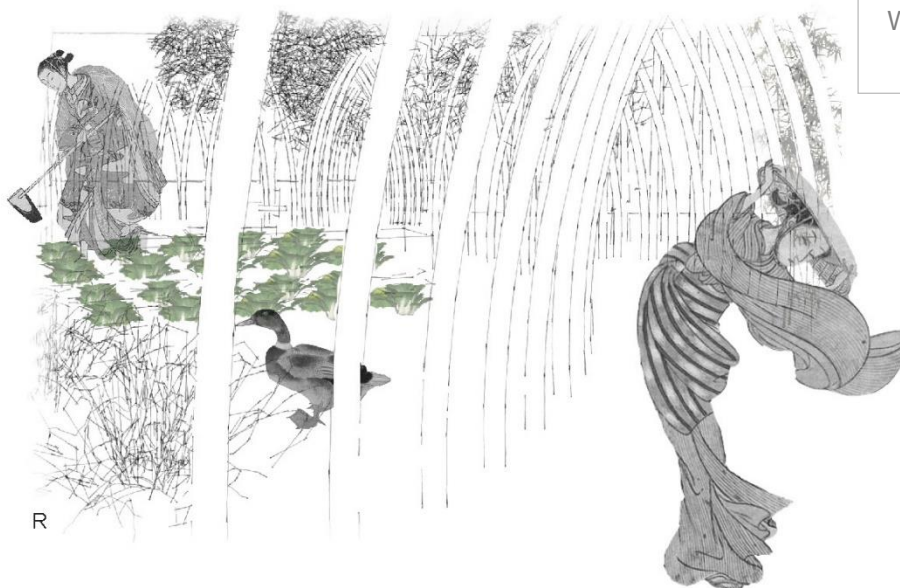
Meditate in the heaven unit and
get restored spiritually



Q



Working in the field with animals is
always fun for me

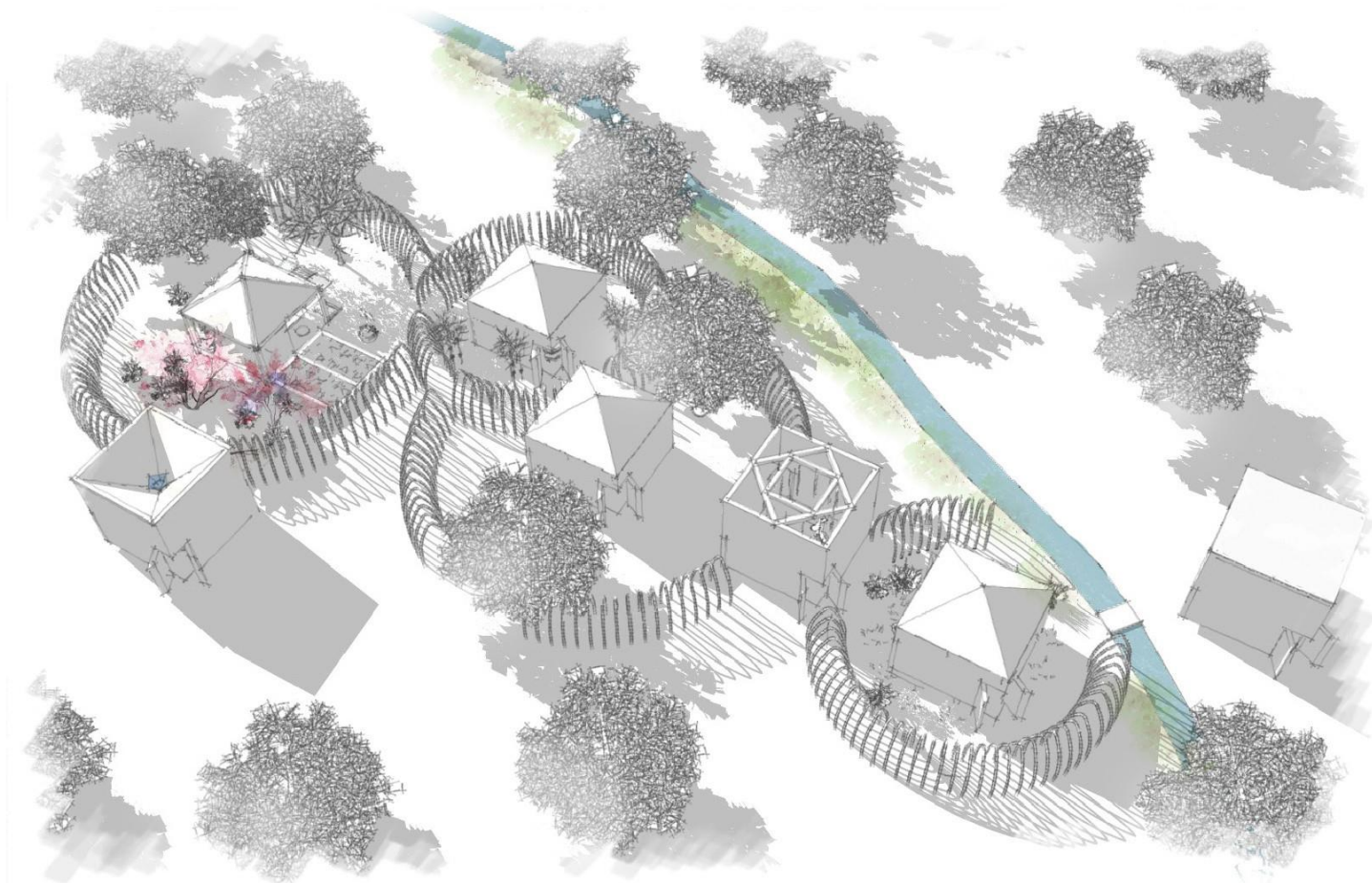


R

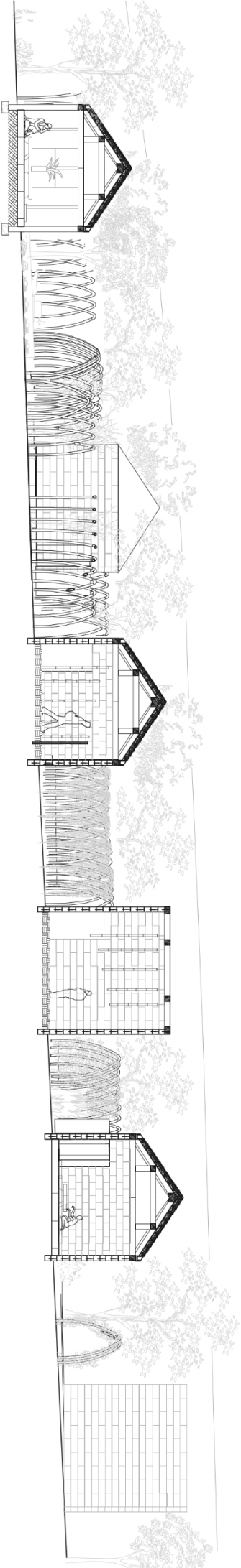
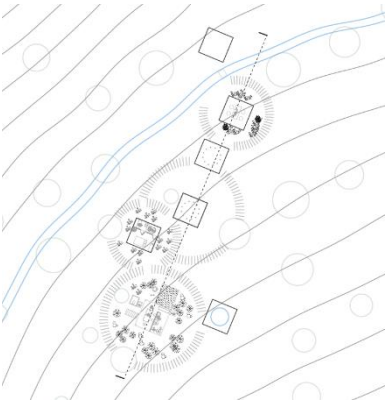


S

Reading under the tree and
observe the mystery of nature



Bird view of the seven units



Site Section 1:200

CONCLUSIONS

Through this process, I have reviewed the rich symbolic culture and holographic world view of the ancient people, I find many similar preferences of using symbols like circle and square, proportions and numerology in many ancient civilizations both in the eastern and western. Meantime, I really appreciate ancestors' highly concern of the relationship between heaven earth and man, as they encoded the architecture with huge information to make it not only functional but also spiritual. And to me what makes architecture not merely building is also due to its symbolic and monumental meaning. Therefore, it possesses the possibilities of conveying information just like a language.

Through the design process, I also learned to think by models as the physical model can give you the real texture, shadow and volume which can never be replaced by virtual models. I try to make the most of model thinking, especially during the process of designing the heaven unit and star unit. It will be very hard to find out how the light effects will be like without physical models as light and shadow is the essential ingredient of these two units. And it is also a way of returning to tradition, as nowadays CAD is widely applied. Through this process, I begin to appreciate the role of physical model in architecture design.

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